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1934

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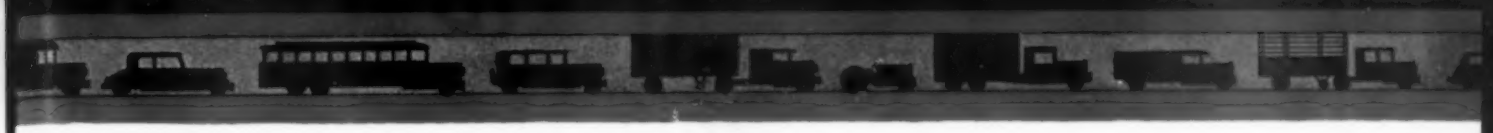
FLEET OWNER

THE FERGUSON PUBLISHING CO., 90 WEST ST. NEW YORK, N.Y.

Devoted to the Better Operation and Maintenance of Truck, Bus, Taxicab, Passenger Car and All Automotive Fleets



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20 Million VALVE SEATS WERE GROUND ECCENTRICALLY DURING 1933

● With leading manufacturers using HALL ECCENTRIC Grinding in production, with thousands of fleets and shops using it for service, twenty million seems a conservative estimate of the number of valve seats ground HALL ECCENTRIC ally in 1933.

There must be some reason why more valve seats are ground with HALL ECCENTRIC Grinders than all other Grinders combined. If you've ever tried to grind a valve seat, particularly of Stellite or other extremely hard alloy, by any other method, you'll understand why. And yet, the same production finish and precision can be secured in cast iron seats with the same Grinder.

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See the HALL ECCENTRIC at some good Jobber's today. If your Jobber can't serve you, write us.

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IN CANADA:
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Allis-Chalmers . . . . Briggs-Stratton . . . Chrysler . . . Citroen . . . Continental . . . Curtiss-Wright . . . Daimler-Benz . . . DeSoto . . . Ford . . . G.M.C. Truck . . Hall-Scott . . . International Truck . . . Leyland . . Massey-Harris . . . Plymouth . . . Renault . . . Reo . . . White Truck Willys-Overland

Left: E-S Grinder in use on pilot in valve guide.

Model E-S in Diamond Dresser

Left: Diamond Dresser Stand supplied as standard equipment. Dresses Wheels to any angle desired. E-S Grinder is sold as shown without Pilots or Wheels or in Complete Sets.

HALL ECCENTRIC Valve Seat Grinder

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FIRST *TO PERFECT*
FIRST *TO MARKET*
IN THE UNITED STATES

UTILITY Specifications

Chrome Nickel Steel, Heat Treated Axles – – –
Electric Steel Castings
Timken Roller Bearings
Wheel and Tire Equipment to match Truck.

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UTILITY Distribution Is Nation Wide

UTILITY SIX WHEEL ATTACHMENTS are available for prompt installation in all principal cities. Get prices and discounts from nearest distributor.

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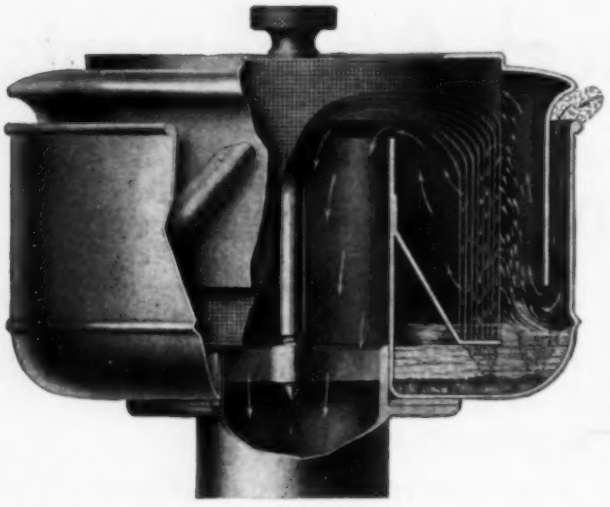
The correct, modern principle in air filtering

Clean air saves the motor, maintains full power, avoids unnecessary wear. Every engineer knows how true this is.



OPERATION

The dust laden air enters on all sides of the unit in a large but relatively thin vein. An induced spiral and rolling motion forces a large part of the grit and dust to deposit on the oiled surfaces of inner and outer cases. Additional dust is washed out when the air comes in contact with the turbulent oil bath. The semi clean air is then thoroughly filtered while passing through the twelve layer patented filter element, which is kept clean and reoiled by the splash of the agitated oil bath. The clean air proceeds to the motor while the dust is washed downward into the sump.

AIR-MAZE originated a new type of air cleaner—for extreme conditions, where dust-laden air is an even more serious problem—road work, dump truck operation, unpaved roads, etc.

The HEAVY DUTY OIL BATH AIR-MAZE uses the correct principle—*slow air speed*—through the filtering unit.

The exclusive design is based on a maximum air speed of 800 linear feet a minute. Solid oil will not pass into the engine. Allows free flow of air—but keeps air in *longer* contact with the filter unit. Affords positive engine protection at *all motor speeds,* without sacrifice of *full motor power.*

Largest filter area and filter capacity, great oil capacity, no nesting or matting of filter, easy to install and service, and complete air contact, *always.* For downdraft installations—a direct mounting—no fittings required.

We gladly cooperate with you in making tests under any conditions you select. Write or wire to

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309 Caxton Building · Cleveland, Ohio

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The Completely Protective Air Filter for All Automotive Equipment

Say "I saw it in FLEET OWNER"—It Helps!

BUCKEYE STAGES, INC.
BUCKEYE STAGES TOURS, INC.
AMERICAN STAGES, INC.
RIDE THE RED BUS
Columbus, Ohio
March 30, 1934.
Champion Spark Plug Company,
Toledo, Ohio.
Gentlemen:
As you know after running several spark plug tests, we changed to Champion Spark Plugs 100% several months ago.
Perhaps it will interest you to know that results to date are very gratifying which indicates toward increased spark plug efficiency for the future and a resultant reduction in maintenance costs.
Yours very truly,
Supt. of Maint.
JGM:EEP
The Short Line
BUS TRANSPORTATION
1933
AWARD
FOR COMPLETENESS AND EFFICIENCY IN MAINTENANCE METHODS AND PRACTICES
CLASS B AWARD—INTERCITY COMPANIES
PRESENTED TO
BUCKEYE STAGES, INC.
COLUMBUS, OHIO
GUARANTEED DEPENDABLE
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USE THE SPARK PLUGS CHAMPIONS USE

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The unequalled experience and painstaking engineering which make Champion Extra Range Spark Plugs winners on the speedways, on the water and in the air, reflects itself in greater dependability and lower per mile cost in bus operation.

ELGIN, ILL.—*Driving a stock Ford V-8 Fred Frame broke all records for Elgin Road Race, averaging 80.2 m. p. h. New free for all record 88.3 m. p. h. All cars used Champions.*

INDIANAPOLIS—*At the last Indianapolis 500 mile race, seven of the first twelve finishing were Studebaker powered—five of which were 85% stock Studebakers. All used Champions.*

PARIS—*A Champion equipped Citroen recently established 296 International and World's records in a run of 300,000 kilometers, averaging ninety-three kilometers per hour.*

There is a Champion spark plug built to your particular requirements. Write for free folder showing latest developments and recommendations.

F. O. 4-34

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TOLEDO, OHIO

Please send folder on 1934 Commercial Type Champions

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CHAMPION
EXTRA-RANGE SPARK PLUGS

Say "I saw it in FLEET OWNER"—It Helps!

A New and Improved GMC Semi-Trailer

GMC TT-218

2,000 Pounds Higher Axle Rating . . .
Now 10,000 Pounds . . . *at a* New *Low Price*

THE new and improved 1934 GMC semi-trailer, TT-218, will meet 90% of all trailer needs.

Its new 4" tubular axle is 27% stronger, permitting the substantial increase from 8,000 to 10,000 pounds axle rating.

Spindle size is 2½", compared to the 2⅛" spindle generally used. Auxiliary springs are standard equipment—no extra cost.

Brakes are larger (17⅛ x 3), for greater safety and lower operating costs. Lining area is larger by 44%. New quick-release valve reduces speed of brake application to approximately 1/6 of former time. Support braces are standard and spring brackets are heavier. Maximum tire size is increased—34 x 7 duals or 8:25/20 duals now available.

At its new low price, this GMC trailer TT-218 is *the* outstanding trailer value in its class, just as the following additional GMC trailer models are outstanding values in theirs:

TT-252, semi-trailer, 16,000 pound axle rating
TT-418, 4-wheeler, 20,000 pound axle rating.
TT-452, 4-wheeler, 30,000 pound axle rating.

Every GMC trailer is built by a *truck builder,* to heavy duty truck standards, to operate as an *integral part* of the truck on which it is used.

Parts are interchangeable with GMC trucks—and service is available, nationally, through GMC branches and dealers.

Call your GMC dealer today.

GENERAL MOTORS TRUCKS and Trailers

GENERAL MOTORS TRUCK COMPANY — *Time Payments Available Through Our Own Y. M. A. C.* — PONTIAC, MICHIGAN

The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

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CCA

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What a surprise for the thief when he takes a sales car,

gets away in a flash and then—discovers that a HOOF GOVERNOR is on the job

What auto thief will go far in a car limited in speed.

And then—there's the thief of engine life who races the engine to destruction.

When a HOOF Cantilever Spring Action Governor is on the job the engine on a service car, taxi or truck foils old man abuse and stays dependably useful to a ripe old age.

HOOF Governors are equally dependable on all engines including 1934 dual carburetor Fords and Vacuum Spark Control Chevrolets.

A FEW DOLLARS FOR A HOOF SAVE HUNDREDS IN UPKEEP

Special Chevrolet Governors

The A.C.H. Governor, shown above, has an *automatic by-pass valve* especially designed for all 1933 and 1934 Chevrolet Engines, with Vacuum Spark Control (Octane Selector). No sluggishness and overheating. Other Hoof and A.C.H. Governors meet all Chevrolet Car and truck owners' requirements.

HOOF and A.C.H.

(KEY TYPE) (SEAL TYPE)

GOVERNORS

With Patented Hoof Cantilever Spring

HOOF PRODUCTS CO.
166 NO. FRANKLIN ST., CHICAGO, ILL.
adopted as standard on the World's largest fleet

A HEALTHY MAN *in*
NOW...*a* HEALTHY

NEW PLUG—DESIGNED BY WORLD'S OLDEST PLUG MANUFACTURER—SETS NEW LOW IN MILEAGE COSTS

From 1927 to 1934 compression ratios in modern truck engines have risen from 4.11:1 to 4.78:1. Average engine speeds per minute and average horse power output per pound have also climbed sharply. Result: much more heat in the combustion chamber; many more explosions in the cylinders. And both conditions are enemies of spark plugs! Insulators crack; electrodes burn away; pre-ignition results. The new Pyro-Action Spark Plug described here has been characterized by fleet owners as the HEALTHY spark plug; because it gives more dependable, lower-cost-per-mile service than has heretofore been possible under modern engine conditions.

* * *

AN entirely new spark plug—made of new materials—has been developed by Robert Bosch A.-G., world's oldest spark plug manufacturer. It is the crowning achievement of 30 years' leadership.

It is designed especially to reduce spark plug cost-per-mile even in the modern heavy duty engine. *Here are definite benefits you can expect:*

- The life of this spark plug under modern heavy duty engine conditions is remarkable.
- The risk of balled up schedules caused by road failures of spark plugs, is reduced to a minimum.
- Properly selected, Pyro-Action Plugs require so little care, inspection and servicing that there is a marked saving in maintenance costs.
- The selection of the correct type of plug has been simplified by a radical reduction in the number of types of plugs and a widening of the heat range of each type.

Discovered: A New Insulating Material

The secret of the new Pyro-Action Spark Plug is the insulator, a synthetic composition of uniform texture. Every Pyro-Action Spark Plug insulator is exactly like every other

Seen under a microscope in contrast with ordinary materials the grain is much finer, smoother, more compact This close grain repels absorption of fuel and oil, a common cause of spark plug failure.

The insulator has such stamina that it resists high temperatures. Bosch Plugs have always been known for the excellency of their insulators but the dielectric strength of the new Pyro-Action insulator is even greater. This margin of safety not only surpasses today's needs but anticipates the future.

Discovered: Simpler Selection

The insulator has such a wide heat range that barely one-third as many plug types cover the entire gamut from cool to hot. Thus the selection of the right Pyro-Action Plug for each engine is sharply simplified. Furthermore the wider heat range of each type enables Pyro-Action Plugs to withstand variations between high and low speeds; hilly and level country; light and heavy loads.

Discovered: A New Electrode Material

Both center electrode and ground electrode of the new Pyro-Action Spark Plug are made of a special alloy, that has unmatched ability to resist gradual burning away of electrodes.

Look at the over-size center electrode of the Pyro-Action Spark Plug—compare it with other makes. Note the construction of the ground electrode—it is pressed firmly into the shell—then staked so that it can never come out. Since it is not welded, the molecular strength is not impaired. *You can adjust the spark gap without danger of breaking off the electrode.*

Make This Test!

Ask the nearest representative to recommend a set of the correct Pyro-Action Spark Plugs for one or more of your own buses or trucks. Compare with any other plugs you have ever used—on a basis of endurance, power, and cost-per-mile. Such a test experience will impel you inevitably, as a matter of good business, to standardize on the new Pyro-Action Spark Plugs for your entire fleet.

Mail coupon for free booklet "What Every Truck Owner Wants to Know About the Care of Spark Plugs."

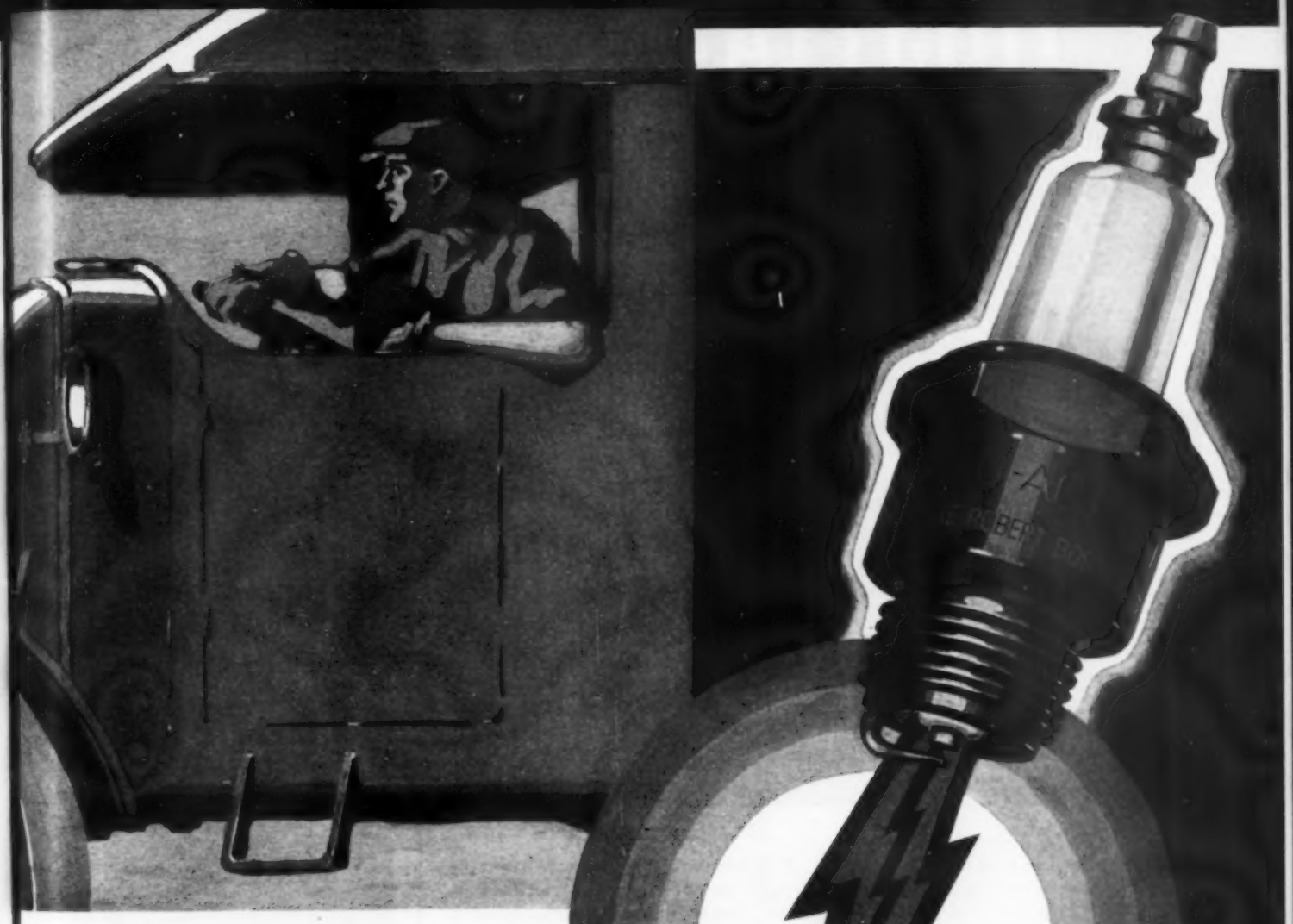
Pyro
SPARK

LICENSE ROBERT BOSCH A.G.

the

EVERY FLEET OWNER NEEDS THIS FR

n the Driver's Seat....
y PLUG *in the* Engine!



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RK PLUGS
the HEALTHY *spark plugs*

The makers of Bosch and American-Bosch products have always taken pride in creating, designing, building and selling only products that are superior to those commonly in use. Proven leaders in their fields, they are built up to a high standard of quality and not down to a price.

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Please send me free booklet, "What Every Truck Owner Wants to Know About the Care of Spark Plugs."

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Address .....

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HIS FREE BOOKLET

"THIS PLATE *is the Key to low cost truck operation"*

● The one *positive* way to determine in advance exactly what truck is best fitted for any particular hauling job is through the Reo Ability Rating System and the Reo Truck Performance Gauge.

The Ability Rating Plate is in plain view on every truck shipped from the Reo factory. It shows the maximum gross load capacity of the truck, percent of grade the loaded vehicle will make in high gear, and the safe loaded speed on level highways.

Thus there is no guessing about what to *expect* of a Reo after it is put in service.

You know that the famous Reo-built Gold Crown Engine will easily deliver what the plate specifies—and you can safely gauge your schedules accordingly.

You know that Reo trucks are built right as well as sold right—that they must possess *extraordinary quality features* to justify Reo in making such a specific forecast of RESULTS.

Equally important to long life and low-cost operation is a correct advance analysis of your *requirements*. These are determined quickly and accurately by the Reo Truck Performance Gauge. In the hands of a specially schooled Reo salesman, it gives the answer to such vital questions as tire sizes, axle ratios and power. Reo offers this analysis without obligation. Write Reo or call your Reo dealer.

Reo Speedwagons and Trucks range from ¾ to 4-6 tons. New low prices—$530 and up. 32 wheelbases, all with Reo Gold Crown Engines. Tractor-Trailer units with correct load distribution and maximum pay load capacity. All prices chassis f. o. b. Lansing, plus tax.

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This book will serve you as an excellent guide in the correct selection of your next truck. In addition to the 15 superiorities with which Reo challenges the field for low cost truck performance, it supplies accurate and invaluable data with which you may compare all trucks in the low price range. Why buy a truck without first looking into the facts and making sure of getting the most value for your money? Write Reo today for the "Truck Superiority Book." No cost, no obligation.

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REO MOTOR CAR COMPANY LANSING MICHIGAN

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Firestone TRUCK and BUS TIRES

STILL RUNNING *after others fail*

L. E. CASTER, Pres. GEO. A. FINLEY, Vice-Pres.-Treas.

TELEPHONE 4200

AURORA AMERICAN BAKING COMPANY

WHOLESALE BAKERS

AURORA, ILL.

January 27, 1934.

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16th & Wabash,
Chicago, Illinois.

Gentlemen:

About three years ago we purchased three new trucks and each came equipped with a different brand of tires, one however having Firestone tires on it.

At the end of 14,000 miles of service one of the sets of tires were worn out and at 18,000 miles another set wore out, but on our check up at 22,000 the Firestones were still serviceable.

We have standardized on Firestone tires due to the exceptional service they have given us and have all of our equipment on Firestones at present.

Yours very truly,

AURORA AMERICAN BAKING COMPANY

Geo. A. Finley

GAF:JE Manager.

ONLY Firestone Tires are safety protected ON THE INSIDE with Gum-Dipped High Stretch Cords. Every fiber and cord is safety locked with rubber, giving greater strength, longer life and greater protection against blowouts.

They are safety protected ON THE OUTSIDE with deep cut, scientifically designed tread that grips and holds the road and gives long wear.

The Firestone Service Dealer or Service Store in your community will inspect your tires, test your battery, spark plugs and brakes without charge. See him today and start reducing your operating expenses.

NRA WE DO OUR PART

Listen to Lawrence Tibbett or Richard Crooks and Harvey Firestone, Jr., every Monday night—N. B. C. Network

FIRESTONE TIRES WILL REDUCE *Your* OPERATING COSTS

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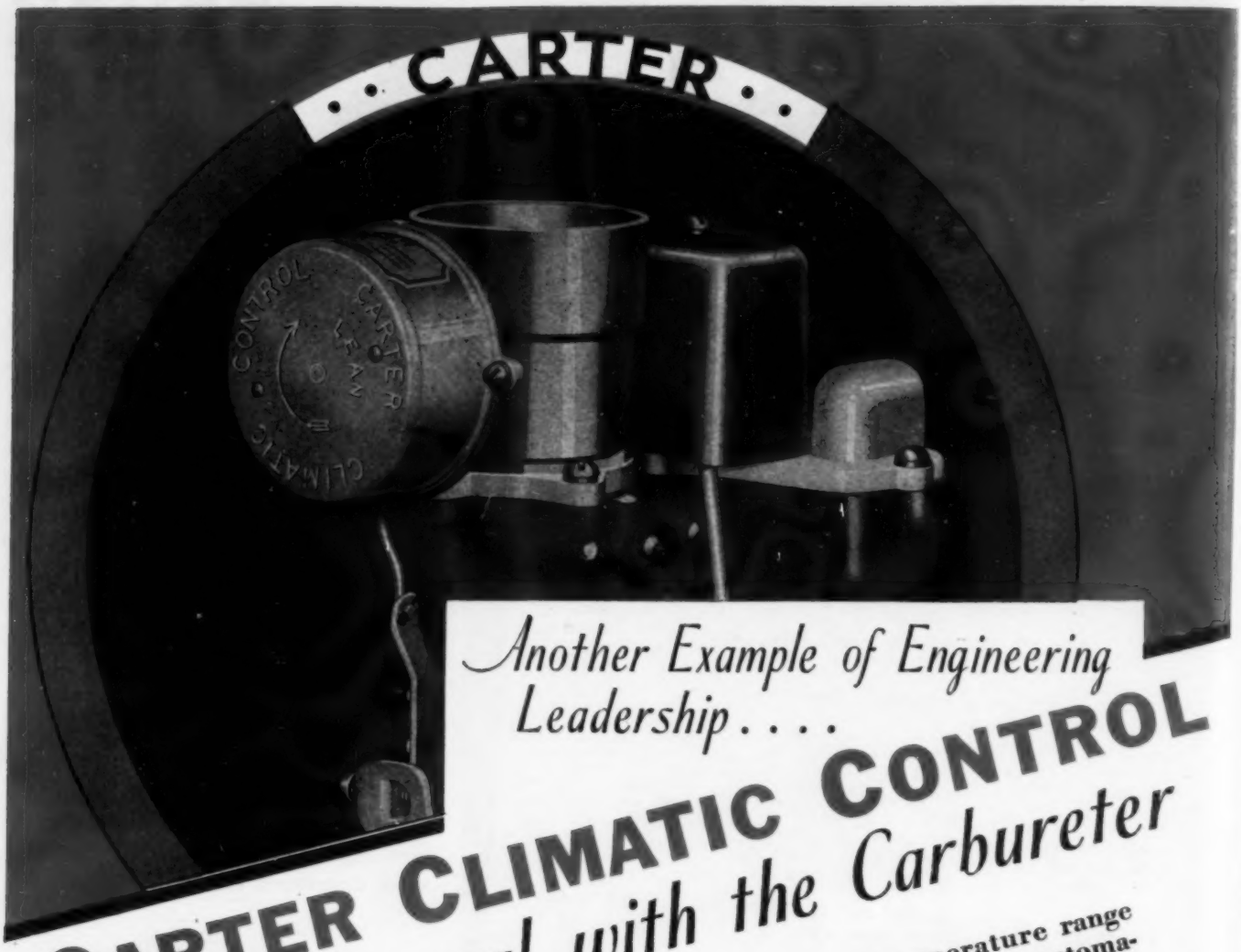
Say "I saw it in FLEET OWNER"—It Helps!



Another Example of Engineering Leadership....

CARTER CLIMATIC CONTROL
—Built Integral with the Carbureter

Because it is built into the carbureter—and not installed as an accessory unit, Carter Climatic Control eliminates linkage, lost motion and possibility of misadjustment—setting a new standard of dependability and accuracy for automatic choking devices.

Since the Carter Climatic Control unit operates directly on the choke, rather than by remote control, it has no connections to bind or stick, and operates correctly throughout the entire temperature range *without adjustment*—giving automatic, quick, easy starting and warm motor operation instantly. It can't *overchoke*, so it prevents "loading" and oil dilution.

And *because it is built into the carbureter* all working parts are *entirely enclosed* and protected from dirt and water.

It is a distinct advance over conventional automatic choking.

Send for free bulletin giving complete mechanical and servicing information on this new carbureter.

CARBURETER

CARTER CARBURETOR CORPORATION

2834-56 NORTH SPRING AVENUE • ST. LOUIS

DIVISION OF AMERICAN CAR AND FOUNDRY CO.

VOL. 12
NO. 4

The FLEET OWNER

APRIL
1934

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Stripping *the* Thread » »

(The Editor's Column)

Breathes there a man with soul so dead,
Who never unto himself hath said,
When on a bolt, he stripped the thread:
"°²..%x ')z°°² v¼"°·²³°°°"

HOT TIMES ARE COMING

● Remember the survey we conducted on Refrigerated Bodies last Summer? Well, there was considerably more experience on the subject that we gathered and which could not find its way into print while the hot spell lasted. Although we did not predict the "long hard winter" which all of us have just been through, we *did* feel that there might be many operators who would not care to be burdened with such a frigid topic while they were having plenty of other cold weather problems. So-o-o we just tucked said data away in our files. Now that Spring is just around the corner (we hope it is, anyway) it will soon be time to think about transporting perishables successfully. You'll find the interesting data which we've saved, on page 26 of this issue. This ought to give you sufficient time to build (or have built) whatever bodies you need so that they will be on hand when warmer weather sets in. We are not predicting a hot summer, but are presumptuous enough to believe that you'll find the experiences of several more operators of some value.

●

RUBBER PAINT WANTED?

● The rapid and severe temperature changes that have occurred during the past few frigid months, particularly on the Eastern seaboard, have caused grief a'plenty among fleet managers. Service stations having large outdoor display signs have also suffered, to say nothing of the billboard companies. It seems that the sudden drops in temperature and the marked differences from day to day have wrought particular havoc on paint work. Truck and bus bodies have not been spared, in many cases, and paint has been seen to suddenly become divorced from the surface in huge flakes, so that after a short time the bodies looked more like unsolved jig-saw puzzles, or camouflaged war equipment, than like their own respectable selves. In our own field, investigation brought out the fact that this happened most frequently where the paint was applied to zinc panels; also galvanized sheet metal. All types of finishes seemed to suffer; it didn't make much difference whether it was pyroxylin, synthetic or oil-and-varnish finish. The paint people have had their headaches with it too, since it has not yet been possible to produce a finish that would have the same coefficient of expansion as the metal, under extreme and sudden temperature changes. When "rubber" paints are developed, someone will make a lot of money. Don't say we haven't put you wise.

●

WHO'S AFRAID, ETC.

● Who's afraid of the big bad trucks? Not very many of our readers, judging from the inquiries that are directed to our Trouble Shooters' Department. Practically all of them have to do with difficulties experienced on passenger cars; few truck inquiries and little or none on buses. We really don't make up these questions ourselves and then answer them, as some close-minded individuals seem to think. If we did, we'd make up a lot of stickers on trucks and then flaunt the answers in your faces. From this we can draw but one conclusion. Fleet men seem to "know their stuff" when it comes to servicing trucks. The more high-strung passenger car, like the fast racehorse, seems to be the more difficult to service, according to the number of inquiries that we get. In order that we don't get stale on the subject of trucks, we wish that someone would give us some truck questions to answer. We won't try to answer them from the desk, but will go out in the field and get real first-hand information for you. And we'll answer you promptly by mail, and then publish both question and answer in an early issue, leaving out the name of the inquirer. The Trouble Department is there for *your* benefit, free, gratis and for nothing. Give us a little work to do, won'tcha? Come up'n question us som' time.

●

DO YOU SAVE THEM?

● From time to time we get letters from operators asking for information on this and that. More recently one chap wrote in and asked if we knew of a form that would show a recapitulation of truck costs, by months and years. It so happened that such a form was published in an issue of ours some nine months previously. Those who save their back numbers can appreciate the value of this. If you are interested in doing so, drop us a line and we'll tell you about an inexpensive binder that will preserve your back issues for your grandchildren. Worth looking into, we believe.

●

ONE IN EVERY SHOP

● Then there was the dumb mechanic who thought that Hotchkiss Drive was the name of a boulevard in Chicago.

●

H. Clay Fischer
Editor

●

Maintaining a Public-Utility Fleet

By R. J. Collins,
Supt. of Transportation, Kansas City Power & Light Co., Kansas City, Missouri

Part II: Transportation from a Public-Utility Standpoint • How Our Diversified Fleet of 156 Assorted Vehicles is Maintained

ONE of the most important phases in operating a fleet is a correct maintenance schedule. Most of our units (described in the March issue of this publication) are operated in and around Kansas City and are serviced from our main garage.

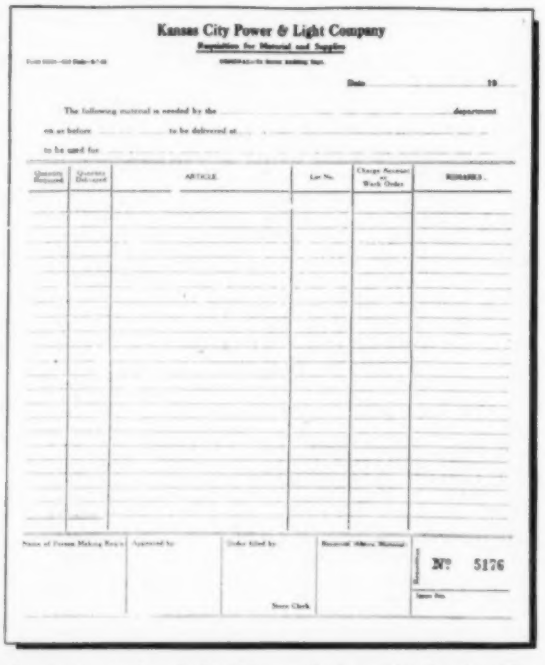
We operate on a weekly inspection schedule and the usual inspection routine prevails, where all units are inspected, including all motor parts, clutch, transmission, universal joints, propeller shaft, rear axle, front axle, wheels, steering gear, brakes, tires, lights, horn, instruments on dash, etc. At these inspections the cars are cleaned up, inside and out; lubricant is replenished in motors, transmissions rear ends; gasoline tanks are checked for amount of gas; bodies are checked for squeaks; tool boxes are checked; the motors cleaned and the chasses greased.

Thus it will be seen that even the minutest details are taken care of at these weekly inspections. In the event that any item is overlooked and the difficulty shows up between inspections, if it is not serious enough, a notation is simply made on a form designed for the purpose, and it is "caught" at the next inspection the following week. To aid the mechanics, all of the drivers, when they come in at night, report any trouble noted during the day, on a special form, and the unit is repaired at once if necessary.

We keep a small active parts stock at our garage, using a perpetual inventory system, which shows the various parts as they are ordered, received, disbursed, etc., and which also shows description and price of the articles and other data relative to delivery, etc. An inventory of about $6,000 in parts and supplies is maintained by us. Last year this stock turned over nine times. All items in stock are requisitioned out on special forms, which in turn are sent on to the accounting department for posting. To aid in keeping a record of tire changes and battery changes, special forms also, are used.

In the shop, several forms are also used to determine costs. An "Auto Repair Ticket" is used every time any work is done. This includes a list of the operations to be done, the mechanic's name, his time, the material used and the cost of the entire job. All of these items are later posted and the ticket itself is filed under the car number, to facilitate checking. A "Time Ticket" is also used, one for each mechanic and which is o.k.'d by the foreman. In charging electric truck batteries, a special form is used, filed under the vehicle's number. This provides a daily record of each charge and the work done by the vehicle.

It is our practice to do all repair work where it is considered practical. We are not doing our own reboring or fitting of pistons. We do, however, align rods, fit pins and rings. We also do some generator, starter and magneto work. In some cases though, we find it more satisfactory to send this work out, especially where exchange units can be obtained. (*Please turn to p.* 16)



Kansas City Power & Light Company

Requisition for Material and Supplies

Date ..... 19...

The following material is needed by the ..... department

on or before ..... to be delivered at .....

to be used for .....

Quantity Returned	Quantity Delivered	ARTICLE	Lot No.	Charge Account or Work Order	REMARKS

Name of Person Making Requisition | Approved by | Order filled by — Store Clerk | Received Above Material | No. 5176

A parts stock of $6,000 worth is maintained. The above form is used for requisitioning parts out. Several of the other shop forms are shown on the following page.

IF EXHAUST PIPES COULD TALK!

POWER PROVER SERVICE WILL STOP THIS WASTE!

MORE than 4000 owners and operators of fleets have adopted the POWER PROVER Motor Testing and Adjustment Service to cut gasolene and oil costs, to lower maintenance expense and to increase fleet efficiency. This exclusive service rendered by Cities Service has saved fleet owners and operators as much as 33⅓% on gasolene and oil and given them more powerful performance with less frequent overhauls.

POWER PROVER Service includes three distinct features: (1) an analysis of exhaust gases; (2) a comprehensive 23-step tuning and adjusting routine; (3) use of exclusive patented Cities Service Tuning Tools and Precision Instruments.

Learn how POWER PROVER Service can, at trifling cost, help you cut expenses just as it has for more than 4000 others. Write for our free booklet "THE CITIES SERVICE POWER PROVER . . . WHAT IT IS...WHAT IT DOES ...WHO USES IT." Start saving at once by writing today to Cities Service Power Prover, Room 702, 60 Wall Street, New York City.

Radio Concerts—Fridays at 8:00 p. m., E. S. T., over WEAF and thirty-three N. B. C. stations.

THE CITIES SERVICE BIG THREE

NEW KOOLMOTOR

The famous high-test, anti-knock green gasolene, for which hundreds of thousands have gladly paid 2 cents premium . . . now yours at no premium.

CITIES SERVICE ETHYL

The new champion of Ethyl gasolenes...fast, tremendously powerful...a super anti-knock gasolene. Backed 100% by the Cities Service name and reputation.

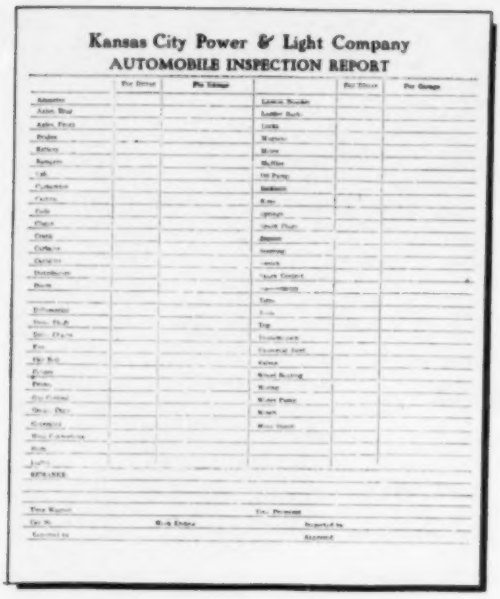
CITIES SERVICE POWER PROVER

The exclusive Cities Service invention that instantly detects unnecessarily wasted fuel and power. Combined with the 23-step Cities Service tuning routine, using exclusive patented precision tools, it stops this waste.

CITIES SERVICE POWER PROVER

Say "I saw it in FLEET OWNER"—It Helps!

A "HOW-WE-DO-IT" ARTICLE *(Continued)*



Kansas City Power & Light Company
AUTOMOBILE INSPECTION REPORT

To aid the shop, drivers fill in this report when trouble occurs.

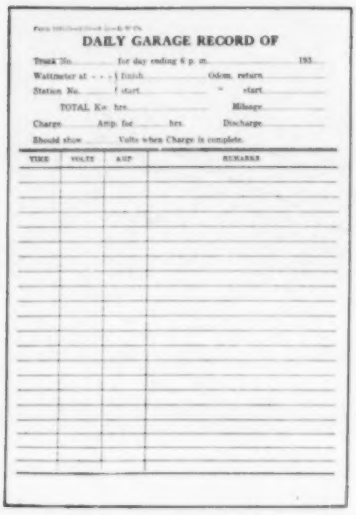
is to break even on all expenses. Obviously, to operate, it is necessary to have accurate cost figures.

Our costs are divided into three main groupings, namely, operating expenses, maintenance expenses and fixed overhead. Under operating expenses we include both fixed and variable charges. Our accounts are divided as follows: 1. Drivers' Time; 2. Washing Expense; 3. Gasoline; 4. Lubrication; 5. Miscellaneous Supplies, including Grease; 6. Tires; 7. Interest, Depreciation, Taxes and Insurance.

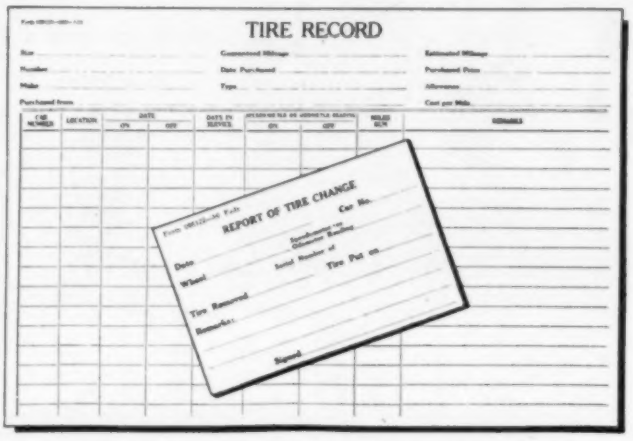
Our maintenance expense is segregated as follows: 1. Repairs to Bodies; 2. Repairs to Chasses; 3. Accident Repairs; 4. Battery Repairs.

Our fixed overhead is grouped together into one account. It includes interest on land and garage buildings, salaries of supervisors, heat, light, power and all general expense in the garages. This total monthly charge is prorated on this basis: all passenger cars, not kept in garage, (one unit); passenger cars kept in garage and light trucks, (2 units); heavy trucks (3 units).

A check of actual costs shows a wide variance, depending on mileage traveled, special equipment on truck, etc. Passenger car figures vary from 3 cents to 8 cents per mile, and truck figures in some cases seem high. For example, the truck mentioned and illustrated on page 16 of the March issue with winch, digger, and boom, runs about 52 cents per mile; however the largest share of its expense occurs while the truck is standing idle. *(Please turn to p. 20)*

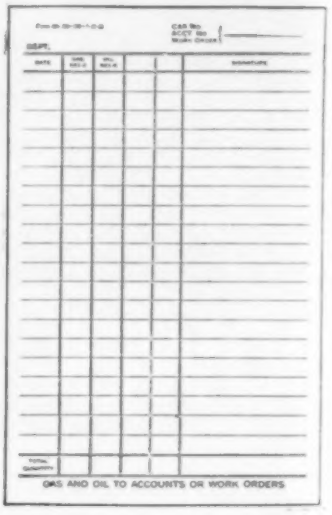


DAILY GARAGE RECORD OF



TIRE RECORD

REPORT OF TIRE CHANGE



GAS AND OIL TO ACCOUNTS OR WORK ORDERS

The two tire forms used are shown above. At the left is the electric-truck form, while at the right is the gas and oil requisition.

We keep a close check on all electrical work, spring work, brake work, motor jobs, paint jobs, etc. to insure that average life is obtained. We send springs out for repairs and in some cases send brake shoes out for relining. We do not attempt to handle section repairs in tires, but we repair our tubes and repair snags and cuts in casings.

We maintain our own body shop, do top repairing and rebuilding, painting, repair fenders, and bodies on most wreck jobs. We send out cars for axle checks as we are not equipped with gauges to handle this work. We have a brake testing machine which we use after all reline jobs.

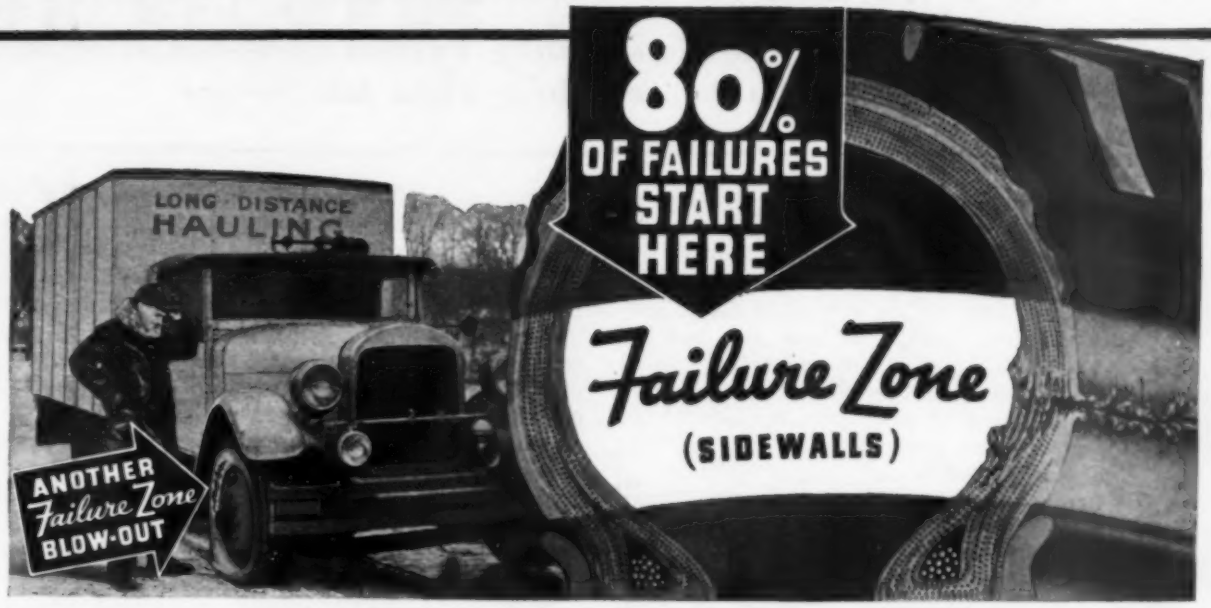
For the past 6 years we have reclaimed all our crankcase drainings successfully. Our oil comes out slightly heavier and a little darker. It is entirely satisfactory. However, we never have been able to get our oil reclaiming costs down below 15 cents per gallon. The reclaiming is done by our stock room man in his spare time, and his time is charged to the reclaiming.

Our transportation department is run as a separate unit of the entire company, in much the same way that an independent contractor, having trucks for hire, would run his company. All departments of the company requisition our department for cars or trucks, and we rent them out at a definite rate per hour or month. Each department furnishes us with a charge account for the use of the unit. Our rates are based on our costs and our plan of operation

Kansas City Power & Light Co.
AUTO REPAIR TICKET

Whenever maintenance work is done, this repair ticket is used.

FACE FACTS! LEARN THE TRUTH ABOUT TRUCK TIRES



GOODRICH AMAZES TRUCK OWNERS WITH TRIPLE PROTECTION AT "FAILURE ZONE"

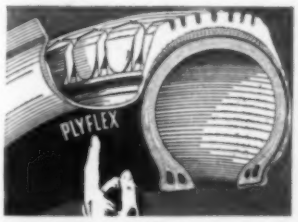
No one has ever told you the *whole truth* about truck tires. No one has mentioned the commonest cause of failures because no one had a remedy.

Do you know that the sidewall is the weakest section of most truck or bus tires? Do you know that of all tires taken out of service prematurely 80 per cent are damaged in the "Failure Zone?" Sidewall breaks and rim breaks take a toll of thousands and thousands of tires every month.

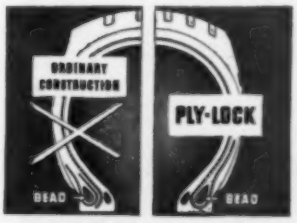
Goodrich dares to face these facts. And Goodrich has done what was said couldn't be done—made the sidewall as strong as the rest of the tire!

GET TRIPLE PROTECTION FREE

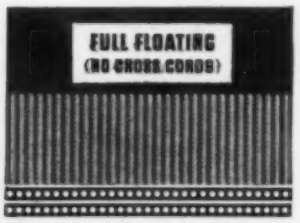
You can now get free insurance against premature blow-outs and sidewall breaks. Greater safety added to the safest tire ever built. That is what Triple Protection at the "Failure Zone" means. And here is the simple 1-2-3 story of this exclusive Goodrich million-dollar development.



1 PLYFLEX—Plyflex is a *new* tough, sturdy rubber material. Every Silvertown truck tire has a layer of Plyflex protecting the sidewall. It bears the brunt of the strains caused by the tire flexing several hundred times a minute. It distributes the stresses throughout the carcass. It prevents local weakness.



2 PLY-LOCK—The short trouble-causing plies in ordinary tires often tear loose just above the bead. A direct result of stresses concentrating at this one weak point. In Silvertowns the plies are "locked" about the beads—anchored in place. The tapered ply ends are floated in rubber. This is PLY-LOCK.



3 FULL-FLOATING CORD—100% Floated-in-rubber cord fabric is used in the new Silvertowns. Each cord is surrounded by rubber. With ordinary cross-woven fabric, when cords touch each other they rub—get hot—break. In Silvertowns there are no cross cords. No friction. Fabric *wears longer.*

FREE! 48-page Safety Manual. Tells how to cut accidents—save money—build good will for your fleet. How to get free Silvertown Safety Awards for your drivers. Write Dept. T-82, The B. F. Goodrich Rubber Co., Akron, O.

HERE'S the greatest development in truck tire history in ten years. Don't take chances. One "Failure Zone" break may cost you ten, twenty, thirty dollars or more. See your Goodrich truck tire dealer today. Have him show you the new tire that costs no more than any standard truck tire. Ask him to show you the convincing demonstration of Triple Protection.

Goodrich *Triple Protected* Silvertowns

FOR TRUCKS AND BUSES

Say "I saw it in FLEET OWNER"—It Helps!

Rust-Proofing of Parts Insures Longevity

By F. C. Fiechter,

Fleet Manager, John Wanamaker, Inc., Philadelphia, Pa.

Advantages We Gained By Cadmium-Plating Various Parts and Assemblies on New Vehicles Before Putting Them Into Service

THE advantages to be gained by the rust-proofing of automobile parts, particularly those in trucks and buses, are being rapidly recognized by automotive engineers and fleet operators. The former are naturally cautious about doing this on an extensive scale, perhaps on account of the initial cost and also because they probably are not fully aware of the great amount of depreciation and failures in operation, resulting from the premature rusting-out of some part because of the absence of a rust-proofing process. The time element in making (free) adjustments and replacements is also an important factor that would be partially minimized if certain parts were rust-proofed, but this too, does not seem to be fully recognized as yet by the majority of automotive engineers.

One of the most outstanding examples of rust-proofing done at the factories is seen in the adoption, by a few manufacturers, of a particular rust-proofing process that is applied to fenders, aprons and other sheet metal parts, before giving them their enameled coating. Another is the use of stainless steel in place of the conventional nickel or chromium-plated hardware.

We, in the John Wanamaker fleet, have been doing a bit of rust-proofing of our own, which work is done at the time of delivery of a new chassis, and before it is put into service. Our experiences along these lines, we believe, will be of particular interest to other fleet operators.

Several years ago when a large number of new truck chasses were procured, we dis-assembled each one to a certain extent, for the purpose of having rust-proofed by the cadmium-plating process, many of the more accessible bolts and nuts, all clevises, spring clips, hood latches and numerous other items on motor and chassis.

The results obtained therefrom are incalculable. However, inspections of certain of these parts have been frequently made to ascertain the effect of our rust-proofing process upon actual wear. Careful records of replacements have since been maintained, and an analysis of this shows that practically no parts have had to be replaced because of depreciation due to rusting out.

Previous to this, it was frequently found necessary for us to remove various parts because of corrosion, seizing or excessive wear. This was particularly prevalent among brake assemblies and other kindred parts.

After four years of operation of the trucks referred to above, we decided to learn in a more general way, just what we had accomplished through our experimental work along rust-proofing lines and also to make a general check-up on all units which we believed had benefited therefrom.

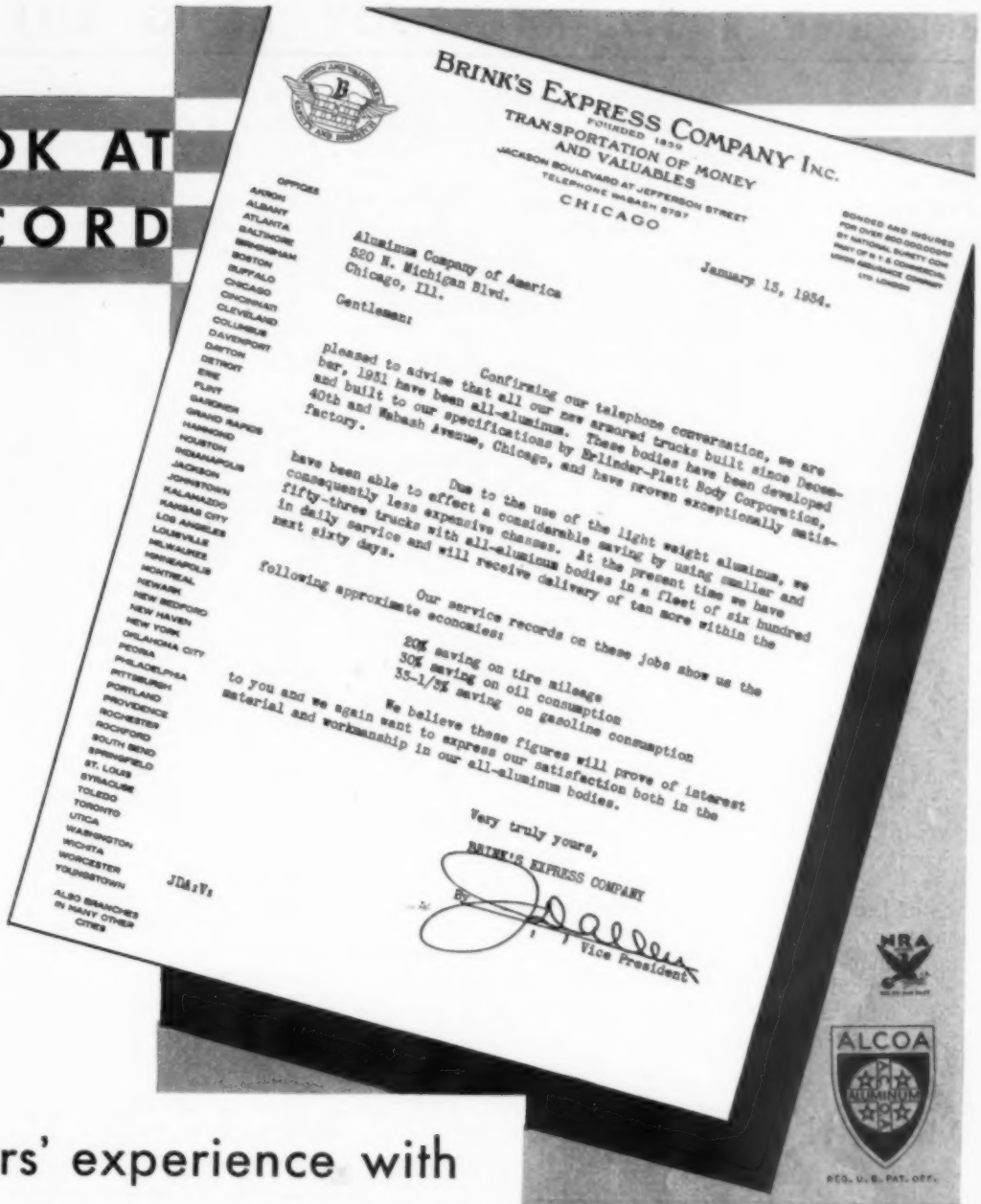
With this thought in mind we recently took a Model 60 White chassis which had been operated in excess of one hundred thousand miles, and completely dis-assembled it to ascertain the amount of wear in all working parts. This chassis was one of thirty-six in which numerous parts were rust-proofed by the cadmium-plating process before putting the vehicle into service. The results which we found were highly satisfactory. Inspection disclosed practically no wear, even in many places where considerable wear should be expected under normal conditions, after one hundred thousand miles of operation in our business.

This assortment of parts is typical of the ones that are cadmium-plated by the Wanamaker folks before putting vehicles into service. We believe the procedure is worthy of your interest and shall be glad to send you further information.—H. C. F.

In certain places there were many small pins, clevises and bearings that never received any lubrication (due to design) other than that applied at the time of assembly, when a mixture of graphite and light body grease was used. Incidentally, it might not be amiss to state here that *everything*, even those parts that are not rust-proofed by cadmium-plating, gets this graphite-and-grease treatment before being assembled. This has been found to save many dollars in time (and penetrating oil) when it really does become necessary to

(*Please turn to page* 20)

LET'S LOOK AT THE RECORD



BRINK'S EXPRESS COMPANY INC.
FOUNDED 1859
TRANSPORTATION OF MONEY AND VALUABLES
JACKSON BOULEVARD AT JEFFERSON STREET
TELEPHONE WABASH 8787
CHICAGO

BONDED AND INSURED FOR OVER $50,000,000 BY NATIONAL SURETY CORP. MEMBER OF N.Y.S.A. CONNECTION, UNDERWRITERS AGENCY LTD. LONDON

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WORCESTER
YOUNGSTOWN
ALSO BRANCHES IN MANY OTHER CITIES

January 15, 1934.

Aluminum Company of America
520 N. Michigan Blvd.
Chicago, Ill.

Gentlemen:

Confirming our telephone conversation, we are pleased to advise that all our new armored trucks built since December, 1931 have been all-aluminum. These bodies have been developed and built to our specifications by Brinder-Platt Body Corporation, 40th and Wabash Avenue, Chicago, and have proven exceptionally satisfactory.

Due to the use of the light weight aluminum, we have been able to effect a considerable saving by using smaller and consequently less expensive chassis. At the present time we have fifty-three trucks with all-aluminum bodies in a fleet of six hundred in daily service and will receive delivery of ten more within the next sixty days.

Our service records on these jobs show us the following approximate economies:

20% saving on tire mileage
30% saving on oil consumption
35-1/2% saving on gasoline consumption

We believe these figures will prove of interest to you and we again want to express our satisfaction both in the material and workmanship in our all-aluminum bodies.

Very truly yours,
BRINK'S EXPRESS COMPANY
By
Vice President

JDA:V:

NRA

ALCOA ALUMINUM

REG. U.S. PAT. OFF.

of Brink's 2 years' experience with Bodies of ALCOA Aluminum

The bigger the truck the bigger the savings. Ask the man who owns a coal truck or van with a body of ALCOA Aluminum.

Write for booklet, on your company letterhead please, "ALCOA Aluminum for Truck Bodies". Tells how to design and build aluminum truck bodies, includes envelope containing large construction drawings and bills of material for various types of bodies, gives operating data on aluminum bodies now in use. ALUMINUM COMPANY *of* AMERICA; 1861 Gulf Building, PITTSBURGH, PENNA.

TRUCK BODIES OF
ALCOA ALUMINUM

Say "I saw it in FLEET OWNER"—It Helps!

PREVENT RUST *and* ENJOY LONG LIFE (*Continued*)

dismantle the job for inspection or service work.

During the process of dismantling and inspection, a number of representatives from oil companies, automotive engineers, fleet and service managers and others who examined these parts, were actually astonished at the splendid conditions found and the almost complete absence of premature wear.

Particular interest was evidenced upon observing the total absence of scale and corrosion in the brake assemblies and practically all of the observers commented on the good condition of the brake drums, which were found to be free from grooves and scores so commonly found in vehicles of most types after a period of operation of over one hundred thousand miles.

Speaking specifically of brake assembles, this practise has proven conclusively that cleanliness and rust-prevention in automobile brake assemblies are of greatest importance. Prevention of depreciation of brake drums and linings has been accomplished, not only by cadmium-plating all small brake parts such as bolts, pins, washers, clevises, studs, toggles and cams, but by wire-brushing and then aluminum-painting all other parts, such as brake shoes, inside face of drums, shields and springs.

These preventive treatments protect the parts from corrosion. If they are not so treated, corrosion progresses rapidly due to moisture and constant vibration will dislodge particles of the oxidized metal, which will drop into the lower part of the assemblies, only to finally deposit on the wearing surface of the brake drums and become embedded in the linings, the result of which is one of the principal reasons why brake drums will score and wear, all other factors being correct.

Another result of corrosion is the seizing or stiffening of moving brake parts, thereby causing brakes to drag and wear. When the moving parts are rust-proofed, they require but little lubrication, for which purpose an application of oil and graphite is excellent.

Some of this information was obtained and the foregoing facts established by treating one side of the brake assemblies of certain vehicles as described above, while on the opposite side the assemblies were untouched. Without exception, the untreated sides caused all of the brake trouble and the wear was always greatest there. Experience and tests covering a period of several years show clearly that brake linings not only last longer when parts are cadmium-plated, but that they are also more dependable and efficient; also that sometimes the life of brake drums is doubled as a result.

It would be our recommendation, therefore, that when a new chassis is purchased, all parts enumerated in the foregoing, be rust-proofed by cadmium-plating. Also that every pin, bolt, clevis and other small moving part be coated with graphite and light body grease before assembling.

In conclusion, it might be well to state that the object of our thorough inspection mentioned above was to determine, if possible, the merits of our preventive maintenance system under which all trucks are operated, the results of using reclaimed oil in motors, the effectiveness of our scheduled chassis lubrication and the special features applied shortly after they were placed into service, as well as the merits of our own rust-proofing, cadmium-plating process.

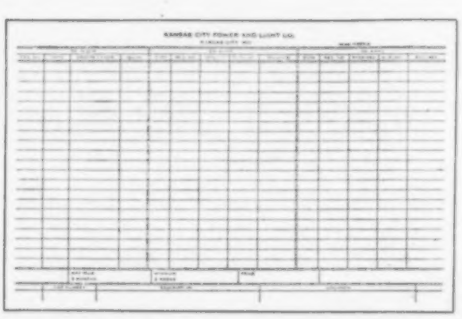
(EDITOR'S NOTE: The actual findings of the thorough inspection referred to above will be presented in another article in the near future. Data on cylinder wear, bearing wear, valve wear, gear wear and other features of general condition will be presented extensively. In the meantime, should any of our readers desire further information regarding the cadmium-plating process as advocated by Mr. Fiechter, the Editor will be glad to put you in touch with the sponsors.)

●

MAINTAINING A PUBLIC-UTILITY FLEET

(*Continued from page* 16)

Our light general hauling trucks run about 10 to 15 cents per mile. I am not going into detail on these costs as they would be of no value to anyone without knowing the actual operating conditions of the units. Our average expense per mile for the fleet was 14.5 cents last year.



Sorry that we made this cut so small. If you have a good reading glass, you will be able to make out that it is a "perpetual inventory" form, used in keeping stock at the K. C. P. & L. Co.

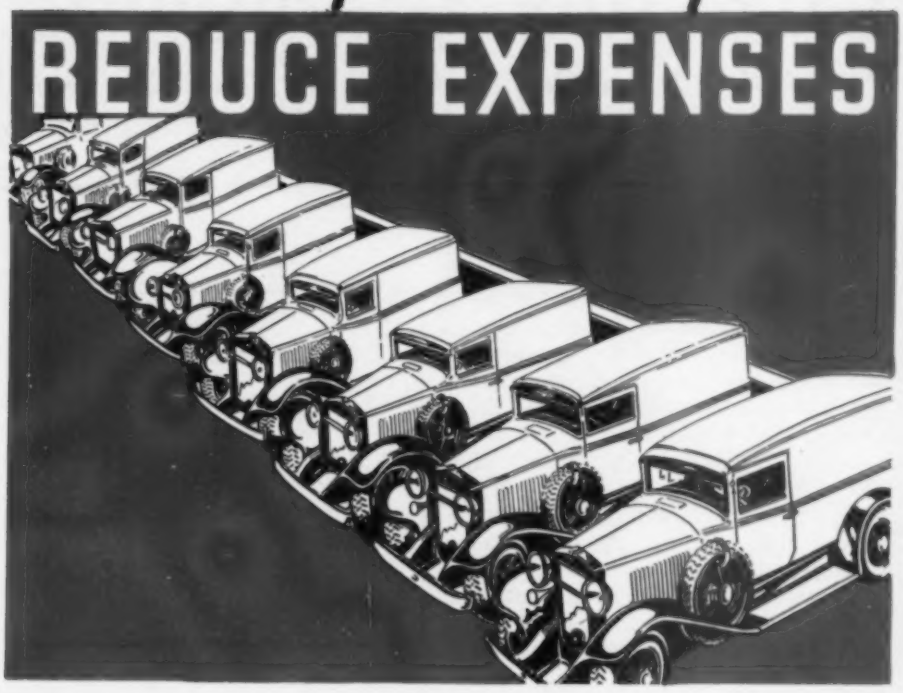
In addition to our company fleet, we have 130 employee-owned cars on which we pay a sliding rate per mile, depending on the mileage. This figure averages 5 cents per mile. The mileage is checked daily on a form entitled "Daily Speedometer Readings" which was especially designed for the purpose.

A definite safety program has been mapped out for our drivers, with the help of our insurance company and the Kansas City Safety Council. Through these two agencies awards to no-accident drivers for 1 year are made in the form of cards, and tags for the cars. Trucks are recognized by placing a metal plate on the side of the truck. In addition, all truck drivers are given a vacation with pay when completing a year without an accident.

Above the door, coming into the garage, we have placed a large board on which we list all accidents for the month and also, the total for the year to-date. We make considerable use of posters for our bulletin boards in the garage and on the trucks. As a result, our accidents for the past year have steadily decreased; last year the decrease amounting to 26 per cent. This year the decrease over last year will be even greater.

Tungar Battery Chargers

REDUCE EXPENSES



G-E Tungar Battery Chargers eliminate run-down car-batteries. For over 17 years, fleet owners of trucks, buses and cars have used Tungars to assure trouble-free batteries. Fleets are more efficient. Maintenance costs are reduced.

For larger fleet owners, the "6-12" gives economical one day charging. This is a "full-wave" Tungar, charges six batteries at the 12-amp. rate or twelve batteries at 6-amp. rate.

The Six-Battery Tungar charges 1 to 6 batteries at the full 6-amp. rate. Many improvements have been added. Initial cost is low. Operation is very economical.

The new 5-amp. Mercury Tungar charges one battery at full 5 amp. rate. For the small fleet owner, this Tungar assures fully charged batteries at low cost. Wiring accessories furnished permit charger to be connected to battery through outlet on dash panel.

For further information on Tungar's complete line, write Section A-224, Merchandise Department, General Electric Company, Bridgeport, Connecticut.

FOR BEST RESULTS ALWAYS USE GENUINE TUNGAR BULBS

NRA

WE DO OUR PART

Please send complete Tungar information:

Name.....

Address.....

City.....**State**.....

GENERAL ELECTRIC

AUTOMOTIVE PRODUCTS

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

Say "I saw it in FLEET OWNER"—It Helps!

By L. V. Newton,
Byllesby Engineering & Management Corp., Chicago, Ill.

Effecting Economies *in the* Fleet

Article VII • Getting Maximum Tire Mileage at Minimum Expenditure; How to Keep Tire Costs Down, Despite Increasing Costs

TIRE renewal and repair costs have amounted to a rather low percentage as compared to the total cost of operation in most fleets during the past few years, due probably, to the low first cost of tires and also to the excellent quality of the tires themselves. Tire costs, however, are advancing, and we can expect still higher tire prices as time goes on.

There are, however, some factors in tire usage that *can* be controlled and, if this is done, great economies will result. The most important causes of tire wear are due to heat and slippage.

Heat may be conducted from some outside source, and it may be generated in the tires themselves; or the two sources can combine to render an extremely undesirable operating condition. Not only do the treads of tires wear off much faster when hot, but also the rubber underneath the tread and between the plies becomes soft under the influence of heat, with resulting separation. Once separation commences, it is difficult to stop, and the life of the tire will then become limited.

Overloading, causing undue flexing of the tire sidewalls, is one of the principal sources of heat.

FIGURE II

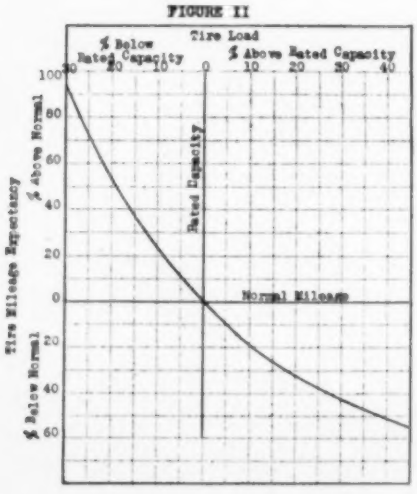


FIGURE I.
OVERLOADING STATISTICS
(U. S. Dept. of Commerce)

Manufacturer's Rated Capacity	Average % Excess of Rated Capacity
1-Ton	62.2
1½-Ton	71.8
2-Ton	87.7
2½-Ton	93.9
3-Ton	68.8
3½-Ton	70.4
4-Ton	68.2
5-Ton	42.9
5½ and Over	7.6*

(* Below rated capacity, rather than above.)

Trucks may be equipped with tires of sufficient carrying capacity to handle their rated loads, but statistics indicate that the average truck in actual service is considerably overloaded.

The results of a recent survey on overloading, made by the United States Department of Commerce are given in tabulated form in Figure I appearing on this page. The average of these Department of Commerce percentage figures, omitting the trucks of 5½-tons and over, is 70.7 percent.

With such overloading of trucks, probably not more than 1/3 of the tire mileage would be secured, which would otherwise be gained were loads carried within the carrying capacities of the tires.

Fleet operators should consider the high cost of overloading tires at *the time trucks are purchased*, and specify tires amply large to carry the expected loads. A good rule to follow is to specify wheels and rims of such size and spacing as will permit oversizing above the size required for anticipated loads. This is an inexpensive factor of safety, and will permit of oversizing, should the character of service or size of loads demand oversizing of tire equipment.

Figure II gives the percent increase or decrease from normal mileage which may be expected according to the percent below or above rated carrying capacity of tires. From this graph it is easy to tell whether it would pay you to oversize your tires or not.

High speed will also cause heating. The effect of speed on mileage is shown in the graph, Figure III. Here again, it is a question whether the gain by increased speeds offsets the higher costs.

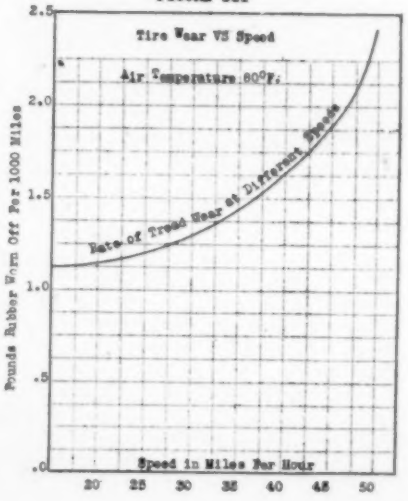
To get the maximum life out of tires, they must be kept properly inflated. Underinflation and overinflation are two great enemies of tire life. Recently a survey was made of a large fleet of trucks in which 40 per cent of the tires were found to be underinflated and 11 per cent overinflated. Tire cost in that fleet could be greatly reduced; in fact, if they check their tire inflation each morning before the trucks go out, they can pay considerably more for tires than they now do and still realize the same tire cost per mile.

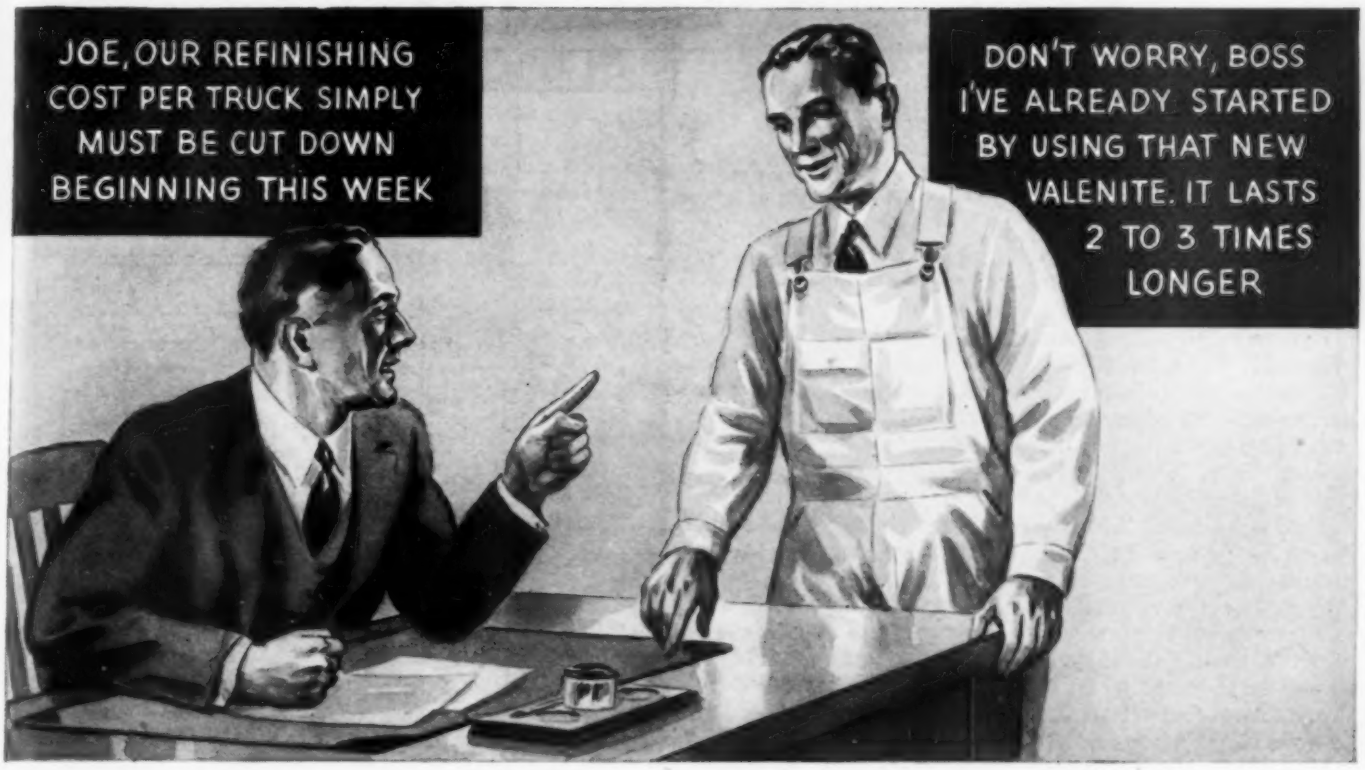
Speed burns up tires, just as it increases fuel and oil consumption and just as it increases repair bills on the chassis. Average speeds of all forms of motor vehicles is high, —a lot higher, I imagine, than a great many fleet operators think.

According to a survey recently

(*Please turn to page* 24)

FIGURE III


Tire Wear VS Speed
Air Temperature 80°F.
Rate of Tread Wear at Different Speeds
Pounds Rubber Worn Off Per 1000 Miles
Speed in Miles Per Hour


JOE, OUR REFINISHING COST PER TRUCK SIMPLY MUST BE CUT DOWN BEGINNING THIS WEEK
DON'T WORRY, BOSS I'VE ALREADY STARTED BY USING THAT NEW VALENITE. IT LASTS 2 TO 3 TIMES LONGER

LONGER-LASTING TRUCK FINISH SCORES HIGHEST IN ECONOMY

OUTWEARS ORDINARY FINISHES 2 TO 3 TIMES—ASSURES LOWER MAINTENANCE COSTS

IMAGINE a finish for your trucks that keeps its gloss 2 to 3 times longer than the best old-style varnish jobs! Yet, that's exactly what the new Valenite does. Makes other methods out-of-date, wasteful.

CUTS RE-FINISHING COSTS

Right away, Valenite makes every dollar go further. Paint jobs have to be done fewer times. Think what this means in less "time out" for your trucks. These savings alone can't help showing up in larger profits the end of each year!

And here's another economy feature worth knowing. Valenite *requires no expensive hand* polishing! This cuts shop time. Puts shop costs lower than ever.

Remember, the sooner you start using Valenite, the sooner you'll begin saving money. The first step is to mail the coupon for complete facts about Valenite—the finish that lasts 2 to 3 times longer. Do this today.

VALENTINE & COMPANY
386 FOURTH AVENUE, NEW YORK CITY
12 Emily Street, Cambridge, Mass. 20 North Wacker Drive, Chicago, Ill.

VALENITE
The Modern Vehicle Finishing System
PRIMER PUTTY
PRIMER-SURFACER ENAMELS
SURFACER CLEAR FINISHING

VALENITE
and
Nitro-VALSPAR

VALENTINE & COMPANY FO4
386 Fourth Ave., New York, N. Y.

Dear Sirs: I am interested in the facts about Valenite. Please send me a copy of "Valenite, The Modern Finish".

*Name*_____

*Address*_____

Say "I saw it in FLEET OWNER"—It Helps!

L. V. NEWTON *on* "TIRE PRACTICE" *(Continued)*

made by the State of Connecticut, the average speed of 10,255 vehicles checked in 145 localities, was as follows: Passenger cars on city streets—27.9 m.p.h.; passenger cars on rural highways—39.7 m.p.h.; trucks on highways—39.9 m.p.h.; buses on highways—36.6 m.p.h.

It was surprising to me to find that the speed of trucks so closely approximated that of passenger cars.

It is with hesitancy that "toe-in" is mentioned, because it has long been discussed when tire service is mentioned. Nevertheless, it still remains one of the principal reasons for fast tread wear. Too often the use of the crude, home-made "measuring stick" results in incorrect measurements of "toe-in," when well constructed substantial measuring devices cost only a few dollars.

A single trip of average length may result in wearing off completely the tread rubber, if the "toe-in" is excessive. Frequent checks of "toe-in" pay for themselves. Some operators make such checks on a mileage basis, others on a time basis. Either method is good, provided the intervals are not too far apart. Both methods should be supplemented by reports of drivers whenever they are in an accident or when they hit anything. Any unusual tread wear should also be observed by visual inspections and corrected.

Under the more common tire abuses may be listed cuts or abrasions due to obstructions on the vehicles themselves. These can easily be eliminated and should be done at the first indication on the tire.

The effects of grabbing brakes, out-of-round brake drums and of brakes that are applied carelessly or too quickly are quite obvious to all of us. With the increase in speed in general, considerable attention should be devoted to brakes and the manner in which they are applied.

EQUITABLE AUTO COMPANY

Low Mileage Tire Report No.....

Date .....

Brand or Serial No..... Make ..... Size .....

Received from..... Removed from Vehicle No .....

Assigned to .....Company Department or Division .....

Total record miles..... Miles on this vehicle .....

Disposition of tire: ☐ Scrapped; ☐ Repaired.

Cause of failure or low mileage:

☐ Brakes.	☐ Bruised.
☐ Wheel or rim alignment.	☐ Cut by sharp object.
☐ Excessive side wall wear.	☐ Nails, glass, etc.
☐ Damaged too badly to repair.	☐ Broken bead
☐ Under-inflation or run flat.	☐ Street car rails.
☐ Tight chains.	☐ Blow-out.
☐ (others)	☐ (others)

ACTION TAKEN: Date .....

Mr .....

1. Check items ..... and report.
2. .....

REPORT: Date .....

Signed .....

Here's an interesting form which analyzes the complete picture in the case of a tire that did not give the anticipated mileage. When you survey it carefully you'll observe that it is unusually complete.

CAR NO. **TIRE "ON" RECORD** 16119

WHEEL DATE ON DATE OFF

MAKE OF TIRE SIZE X NO.

METER READING MILES. OLD TUBE NEW TUBE

MILEAGE OFF	CHGE. TO CAR	REMARKS
MILEAGE ON		
MILES SERVICE	TIRE	
LIST PRICE	TUBE	
ADJ. ALLOWANCE	TOTAL	
NET COST	ADJ.	
COST PER MILE	NET	

CAR NO. **TIRE "OFF" RECORD** 16119

WHEEL DATE ON DATE OFF

MAKE OF TIRE SIZE X NO.

METER READING MILES. MILES SERVICE

REMARKS

This interesting form gives a complete picture of tire performance for each vehicle. It is the one used by United Parcel Service.

Except in emergency cases, it is seldom necessary to bring a vehicle to a stop in the minimum possible distance. Many drivers approach intersections or traffic lights at nearly maximum speed and, should it become necessary to stop, there is no alternative but a severe brake application. This practice, it goes without saying, should not prevail.

Regarding tire repairs, it is best, after all is said and done, to follow the well known "stitch in time" theory. Tread cuts allow dirt and moisture to get into the carcass of the tire and ruin it. These can be quickly repaired with a "tread gun." Large cuts, of course, may necessitate sectional repairs, which should be made as soon as discovered.

●

A Few Notes on Tires, by W. D. Bixby

WHEN considering fleet maintenance costs, regardless of the type of operation, the selection and care of tires looms up as one of the big factors in keeping costs down, or making them unnecessarily high.

It is our belief that tires should be treated as a separate problem and that the tires of a large fleet of automotive vehicles should be put into the care of a competent man, who should, as well, be given what assistance he needs. This man should study tires and conditions affecting them. Tires should be his hobby and his responsibility.

Tires on the larger fleets of the United Parcel Service are cared for in this manner. By the way, this man in charge of tires is not an office man. He is a mechanic selected for his ability in the care of tires and trained to do his work as it should be done. He keeps all his own tire records and either makes his own purchases or is consulted before they are made.

More than a Jack — A PORTABLE POWER UNIT

AS a lifting jack alone, a Blackhawk Hydraulic pays its way in any fleet shop or on the road — saving valuable minutes every time there's a load to be lifted.

As a *portable power unit*, the Blackhawk is indispensable. Straightening frames and axles, installing motors and transmissions, pressing gears and bushings — all are "down the alley" jobs for Blackhawk Hydraulics. They give you tremendous power, easily and safely controlled—with micrometer accuracy. And they are never out of order.

Send the Coupon for data on this complete line of hand and floor jacks—all hydraulic—in capacities from one to 75 tons . . . (Jack shown is CB-9—an all-purpose 7 tonner.)

BLACKHAWK HYDRAULIC JACKS

BLACKHAWK MFG. CO., Dept. FO-4, Milwaukee, Wis.

Send data on ☐ Hand Jacks, capacity.....tons; ☐ Floor Jacks. Check which.

Name .....

Shop Address .....

Preferred Jobber .....

Say "I saw it in FLEET OWNER"—It Helps!

More Refrigerated-Body Experiences

Here Are the Experiences of Several More Ice-Cream Fleet Operators With Respect to Refrigerated Bodies and Their Accessories:

Golden State Ice Cream Co.

"FOR the transportation of ice cream (only) we are using 30 refrigerated bodies at the present time. We are using salt-and-ice, dry-ice and mechanical refrigeration. In this connection, the following test which we have made with a dry-iced body will undoubtedly be found interesting:

"Test was made from February 3rd to February 13th, inclusive and covered nine working days. (Editor's Note: Remember, this is in California, where February weather is not like it is in other localities.) The truck body was made of metal-wood for the outside covering, with galvanized inner linings, using hair insulation, with a total wall thickness of six inches overall. The bottom insulation was of cork-board construction, same thickness.

"There were two ice-cream compartments, each measuring 50¼ inches long, 58½ inches wide and 37½ inches high. The empty can box was forward of the cream compartments and was the full width of the truck. It was so constructed as to permit the installation of a mechanical refrigeration unit, when desired. There were two dry-ice hatches, one for each compartment, located on top of the truck. Diffusion was obtained by means of a ¼ inch aluminum plate on top of each compartment. The body was mounted on a Dodge, two-ton, pneumatic-tired chassis. Only one ice cream compartment was used in this test.

"The truck was loaded in the morning with ice cream from our storage rooms. Average temperature of the ice cream as it came from our storage rooms was 8 degrees F. Dry-ice was weighed out in the morning and at night on accurate scales. The truck was unloaded at night and all ice cream returned to storage. Cream box readings were taken at night after unloading by means of a recording thermometer. During the day, ice cream and cream box readings were taken with two mercury thermometers.

"Starting on February 3rd, 20 lbs of dry-ice was used, with 3 lbs returned. The returned dry-ice was discarded and the truck left empty. The temperature rose to 35 degrees F. in the cream box by 7.00 A. M. the following morning. The returned dry-ice was thrown away for three days. After that, it was left in the hatch after weighing.

"Dry-ice consumption was 17 lbs, 15 lbs and 21 lbs, respectively, for the first three days. On February 7th, a piece of fibre-board carton, .06 inches thick was cut to an exact fit and placed in the bottom of the dry-ice hatch. The consumption of dry-ice was only 5¼ lbs on this day. This piece of cardboard halted the diffusion to such an extent that only one-third as much dry-ice was used, as in the start of the test.

"Since the conclusion of this test on February 13th, 5 and 6 lbs of dry-ice has been used daily in the truck, with a return of about 1 lb. of dry-ice. The ice cream returned at the end of the day remained in excellent condition.

"We believe that ice-and-salt keeps an even temperature; dry-ice keeps harder and is cheapest; and that mechanical units are satisfactory, but cost more. Hair insulation is satisfactory; cork is best insulation but makes bodies too heavy. We design and build our own refrigerated bodies."—*S. F. Koenig, Supt. of Motor Vehicles, Golden State Co., Ltd., San Francisco, Calif., operating a fleet of 47 vehicles.*

Hutchinson Ice Cream Co.

STORED-UP cold easily keeps ice cream in perfect condition during transportation for the Hutchinson Ice Cream Company, Cedar Rapids, Iowa, in two trucks using Frigidaire compressors coupled with Kold-Hold units.

These trucks maintain a temperature of around zero throughout the day. At night the compressor is connected with the city power line.

On trips of 260 miles the temperature of this truck varies only approximately 10 degrees while carrying a load of 400 gallons of package ice cream.

•

Illinois Ice Cream Co.

FOUR hundred and twenty-five gallons of ice cream are kept safely refrigerated throughout the day in each of two new trucks just acquired by the Illinois Ice Cream Company, Chicago, Ill.

This is accomplished through the use of a three-quarters' horsepower Frigidaire compressor and two Kold-Hold tanks capable of absorbing sufficient b. t. u's. so that operation of the compressor is not required during the day. When the trucks are returned at night, the Frigidaire compressors are connected with the city power line and the Kold-Hold units made ready for operation on the following morning.

The bodies of these trucks, built by the Batavia Body Company and mounted on General Motors Truck chasses, are 136 inches long, 80 inches wide and 69 inches high, housing a bulk compartment, package goods compartment, empty can compartment and compressor compartment.

The exterior panels are of 22

(*Please turn to following page*)

FAFNIR HAS A BEARING *on your profits!*

Operators are enthusiastic over the service they get from Fafnir—service which simplifies replacement problems and increases service miles. Both factors are profit-producers.

Fafnir stocks are within easy reach of practically all garages and the Fafnir line includes every type and size of ball bearing for every make of bus and truck. You can save in spare parts expense by having a nearby Fafnir distributor carry your ball bearing requirements. He will be glad to cooperate.

Add to this the unexcelled high quality of the Fafnir line which guarantees the maximum of trouble-free service in any and every bearing point. Small wonder bus operators are taking full advantage of Fafnirs.

If you are not using Fafnir Ball Bearings, drop us a line. We will have our nearest distributor call and demonstrate how Fafnir can help you with profits. THE FAFNIR BEARING COMPANY, *New Britain, Conn.* Pittsburgh . . Atlanta . . Dallas Kansas City . . San Francisco . . Cincinnati . . Chicago . . New York . . Minneapolis . . Portland.

Safeguarding Quality

FAFNIR BALL BEARINGS

Say "I saw it in FLEET OWNER"—It Helps!

HOW WE KEEP THEM COLD (*Continued*)

gauge autobody steel over ¼ inch 3-ply veneer, while the interior panels are made of galvanized iron over ¼ inch 3-ply veneer. The insulation is of Wilson's haircraft material, 5 inches thick, in the walls while the roofs in addition to this have an inch of Balsa wood. The floor is insulated with 5 inches of corkboard.

•

Hydrox—At World's Fair

FABRICATED of gleaming chrome and aluminum, a huge ice cream delivery unit has been constructed through the collaboration of the General Motors Truck Company and the Frigidaire Corporation for the distribution of Hydrox ice cream throughout the grounds of the Century of Progress Fair at Chicago.

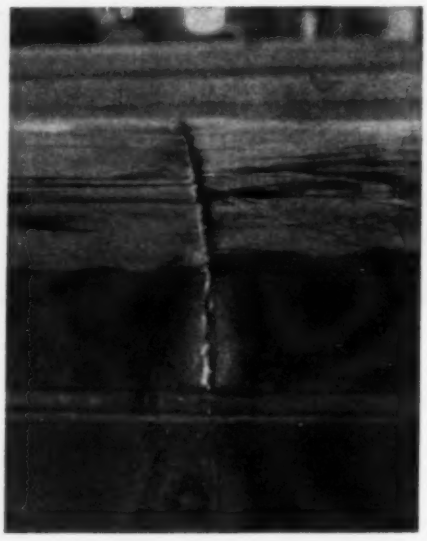
The big unit weighs 16,000 lbs. with its payload of 405 gallons of ice cream which is stored in 81 five-gallon cans. The chassis, with certain modifications, is the standard T-43 model, 194-inch wheelbase, equipped with 9.00 x 20 single front and dual rear heavy service balloon tires. It is powered with the standard GMC 257 valve-in-head six cylinder motor developing 76 brake horsepower at 2,500 r.p.m.

The major feature of the special body is a central unloading aisle which extends between the two storage sections from the cab back to a chrome-railed rear deck resembling an observation platform. This arrangement permits attractive streamlining broken only by two rear vision mirrors and by two pillar lights designed in the form of an ice cream cone. Outriggers from the 8-inch channel steel frame provide a solid bed for the truck body.

The roof of each storage section is formed from 14-gauge sheet aluminum, rolled and hammered to shape. No fabric is employed and the roof is water, dust and air proof. The same material is used for the exterior panels which are backed up with a composition wood fibre board securely attached to the frame work. Air seasoned wood, later kiln dried to 7 per cent moisture content, is used in the frame. The floors of the aisle and the loading platform are covered with red mastipave and protected by steel strips. An auxiliary folding seat upholstered in genuine leather is provided for an attendant on the rear platform. Similar upholstery is used in the cab which seats the driver and a helper. The floor of the truck is insulated with seven inches of cork while the six inch sides, ends and top are filled with Wilson Haircraft insulation.

Three ice cream compartments on each side of the aisle are reached by six doors which open toward the front in order not to interfere with loading or unloading. The compartment doors of four-step construction, with a welt between each step to assure an air-tight fit, are fitted with slam and take up locks and two massive hinges. Heavy galvanized sheet steel protects the compartments and the inside of the doors against wear. Three roof ventilators just back of the cab ventilate the refrigerators.

The refrigeration equipment is a Frigidaire condensing unit operated by a single-speed power take-off and equipped also with a 110 volt, 60 cycle, alternating current motor. A four-belt flywheel employs two of its belts as power take offs for road operation, while the other pair are connected to the motor pulley for garage or night operation.



Ox-welded aluminum ice-cream bodies are described in the third column of this page. Here's a close-up of the center seam of the truck roof, showing how the two aluminum roof sheets were welded together. The front and back ends were also welded to the end pieces.

Eight cooling coils provide the evaporator surface in each of the two compartments. A refrigerant control valve is installed on each two coils and the entire system is charged with refrigerant. Temperature control is accomplished through manual operation of the power take-off or the electric motor. This type of application, besides eliminating objectionable noise, conserves both space and weight by dispensing with a separate gasoline motor. The power take-off speed applied to the condensing unit can be adjusted either for city or rural service by providing power take off pulleys of the required diameter. Further details of this interesting unit will be furnished on request to the Editor.

•

An Ox-Welded Aluminum Body

ONE of the larger ice-cream companies in New England builds its own bodies, some of which are built as described in the following paragraphs:

This firm decided to reduce the body weight of new units by substituting 18-gauge aluminum sheet for iron. By so doing, it is possible to use either a 2-ton instead of a 2½-ton chassis for the truck, or to carry heavier pay-loads with present 2½-ton chasses.

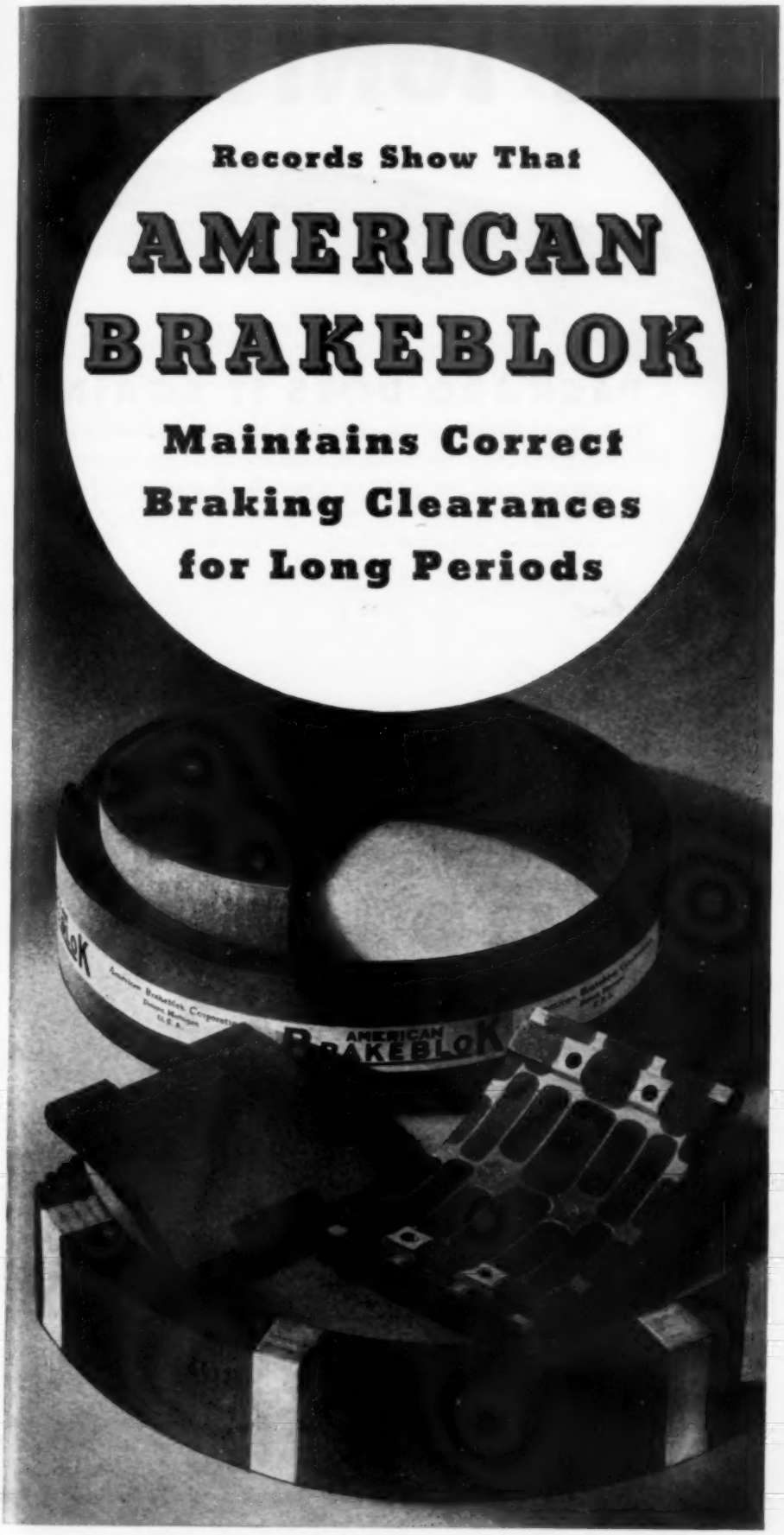
Each body of this type contains a small refrigeration unit. The bodies themselves have capacities of about 500 gallons of ice-cream and each is divided into three compartments: one in the rear for empty cans; one in the front for the refrigeration unit; and one in the center, the largest, for the filled ice-cream cans. The refrigerating unit, mounted in the front, as may be seen in the picture on the preceding page, is operated either by a small gasoline engine, or electric motor, which circulates methyl chloride through the coils in the ice-cream chamber.

The process of oxwelding has been applied to the fabrication of the roof seams, the ventilators, the expansion valve drains, and the incidental joints at other parts of the body.

Incidentally, this process was the means of solving an important problem in the construction of the roof of this truck, which was done in the company's own body shop.

The double ventilator which extends across the front end of the roof is almost entirely fabricated by oxwelding, having oxwelded seams, corner joints and braces. Constructed in this way, the ventilator cannot work loose and rattle as a result of the vibration to which it is subjected.

The expansion valve drip pan is shaped from light sheet aluminum and has several welded joints. The purpose of this pan is to drain away the water which forms when the ice around the expansion valve melts. Although very thin metal is used for this part, its oxwelded joints give it added strength and protect it from damage. In the empty-can and refrigeration unit chambers, several small corner joints are oxwelded. One of these can be seen in the upper right corner of the opening at the front end of the truck. It will also be noted that the supports under the refrigeration machine are welded together. A large drip pan extending the whole length of the body also is oxwelded at all joints.



MAINTENANCE records show a remarkable freedom from the necessity of brake adjustment on vehicles equipped with American Brakeblok. This is due in large measure to the fact that American Brakeblok is absolutely non-compressible in braking service, nor does it swell under any conditions. Correct braking clearances are thus maintained for long periods and adjustments are only rarely required.

American Brakeblok is uniformly safe, satisfactory and economical on passenger cars, trucks and buses. It is made only in one grade—the finest—and the material is fundamentally the same in all its forms. The alloy-grid or mesh backing, by allowing deeper counter-sinking, adds greatly to the thickness of usable material, gives maximum security of anchorage and the most precise installations.

American Brakeblok is the original non-fabric brake lining—a dense, homogeneous solid, formed under great pressure, thoroughly heat-treated and accurately ground to size. It is available in all forms—Rolls, Full-Coverage Sets, Keeper Type and Bolt-On Full-Coverage Type Brakebloks.

Fleet owners everywhere are reducing braking costs by standardizing on this economical lining. Write for information on any type of installation.

NRA

Quick Facts About American Brakeblok

This new type of braking material is:

- —a dense, homogeneous solid—the same clear through.
- —formed under pressure—not woven or laminated.
- —scientifically heat-treated.
- —ground to absolute uniformity in thickness.
- —resistant to highest braking heats.
- —non-compressible under braking pressures—stays in adjustment longer, minimizing possibility of squeals.
- —made with an alloy backing that gives greater thickness of usable material—longer life—and better installations.

AMERICAN BRAKEBLOK
Reg. U.S. Pat. Off.

AMERICAN BRAKEBLOK CORPORATION • 4660 MERRITT AVENUE • DETROIT, MICHIGAN, U. S. A.

New York, Cleveland, Chicago, St. Louis, Los Angeles, San Francisco

A Division of **American Brake Shoe and Foundry Company**

THE BIGGEST IGNITION

PACKARD DOES IT AGAIN!

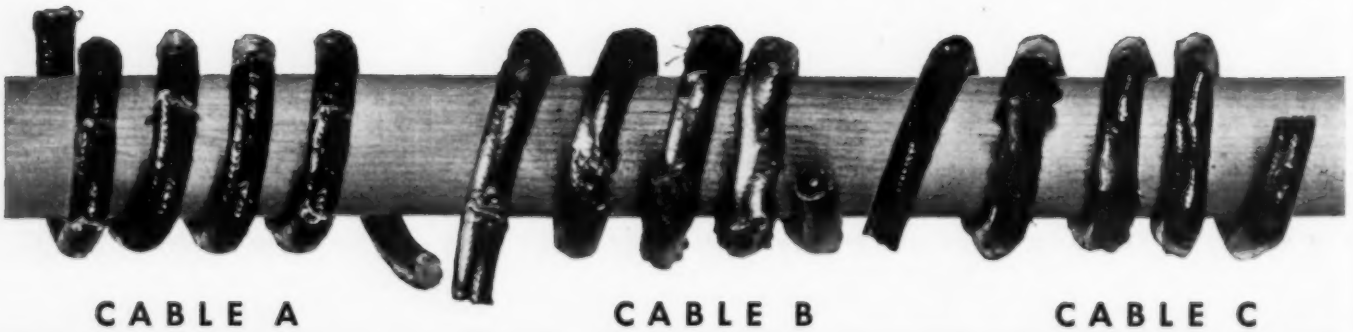
Packard revolutionized the ignition cable industry with lacquered high-tension cable. Once again it has remained for Packard to pioneer—to meet the gruelling demands of present day truck and bus operation—with a new, radically different cable that has obsoleted overnight all types of cable in this service—

Packard
TRADE MARK

FOUR·FORTY
IGNITION CABLE

AN EXCLUSIVE PACKARD DEVELOPMENT

—with an outside coating of secret formula, that to a degree never before known—*withstands:* the blistering of heat; the softening of oil; the cracking of cold; the wear of abrasion; the eating away of corona.



CABLE A CABLE B CABLE C

CABLE NEWS IN YEARS

WHAT "FOUR-FORTY" IS

Rubber compounds are essential in insulating high voltage currents. But rubber is affected by heat, oil, corona, etc. So to protect rubber from these, outer coverings of cotton braid, coated with lacquer, have been used over the rubber. Packard, not satisfied, has sought for years a still better outer covering. And Packard has found it in "Four-Forty"—a rubber-like substance of inorganic base—a compound of secret, exclusive formula that is designed to give complete protection to the inner wall against the effects of heat, oil, grease, gasoline, abrasion, cold, corona, etc. As to Packard engineers' success—the photographs and tests tell their own story!

● Packard knows the importance of maintaining "on time" schedules . . the expense of lay-ups between scheduled overhauls . . the part that ignition cables play in efficient, economical truck and bus operation.

Realizing the increasing requirements and extra strain put on cables in today's truck and bus service... Packard set out to develop a new and more efficient, longer lasting cable. Good news travels fast . . . and months before we were ready operators were asking us for information and test samples.

But Packard engineers and production experts . . . with 30 years of reputation for quality and leadership in cable building at stake . . . would not hurry . . . would not make a premature announcement.

Now the stamp of approval has been given . . and the story can be told . . of this revolutionary new cable that Packard sincerely believes is as far ahead as was lacquered cable when first introduced by Packard.

To every operator we say: no matter what results you are getting from your present cable . . . try the new Packard "Four-Forty." Arrange through your jobber for a test on your equipment. Learn in your own service how this remarkable new ignition cable can give you better performance and save you money.

PACKARD ELECTRIC CORPORATION
WARREN, OHIO

YOU WANT FACTS ... HERE THEY ARE!

To illustrate the superiority of this cable we subjected it, along with samples of 5 leading makes of lacquered cable, to an aging test wherein the cables were subjected successively to various conditions as follows:

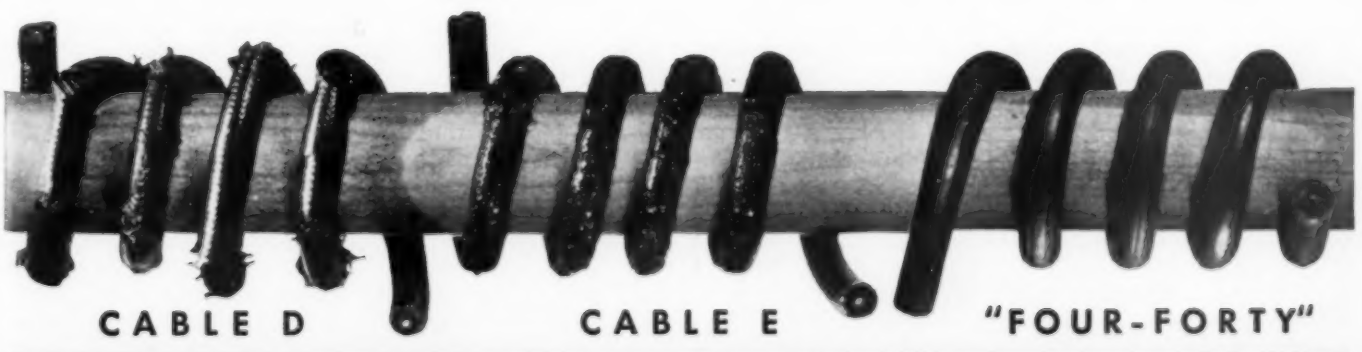
1. Hot Oil . . . . . 200 F for 24 hours
2. Oven Heat . . . . . 210 F for 76 hours
3. More Oil . . . . . 200 F for 24 hours
4. Salt Water . . 24 hours at room temperature
5. More Oven Heat . . . . 250 F for 15 hours

After each successive stage of the test, the samples were wrapped on 1" mandrels to test for flexibility. The accompanying photos tell the story of what happened.

All cables except "Four-Forty" and one lacquered sample cracked after the second stage of the test—the remaining sample of lacquered cable failed after the 5th test. "Four-Forty" maintained its original appearance and flexibility and showed no signs of cracking when bent on ½" diameter after the test.

The samples were further subjected to an electrical test after aging. Four lacquered samples failed at 10,000 volts and the other two failed as soon as voltage was raised to 15,000. Packard "Four-Forty" withstood *10,000 volts for 1 hour, 15,000 volts for 1 hour and 20,000 volts for 3 minutes.*

In addition . . . Packard "Four-Forty" cable has been in hot oil continuously for 6 weeks with no loss of flexibility or other deterioration. "Four-Forty" does not crack when bent on ¼" rod at zero temperature. When voltage is increased at rate of 1,000 volts per minute, "Four-Forty" will consistently go to 40,000 volts before rupture occurs. This is greatly in excess of normal requirements.



CABLE D CABLE E "FOUR-FORTY"

Salvaging Street Sprinklers' Sprockets

A Bit Awkward to Pronounce, but Easy Medicine to Take • Eastern Fleet Operator Finds "Pot of Gold" in Hard-Facing Worn Truck Parts

As Related to Your Editor

H. Clay Fischer

WHEN we ran an article in a recent issue on the subject of "Hard-Facing of Parts to Combat Wear", little did we think that we "started something." Since then, many requests have come in from operators in various parts of the country, asking for further information on the process.

To you who have written in, the dope has gone forward to you; we trust that you are able to apply it to your particular operations in a manner that will further reduce maintenance costs.

To those of our readers who are interested, but neglected to look further into the matter, let us present another experience story covering this process. And what could be a better teacher than Old Man Experience? Here is the result of our further investigation on the subject:

It seems that the superintendent of a street cleaning department in a large Eastern city was recently faced with just such a problem of frequent and expensive replacements resulting from the deterioration of metal parts subjected to abrasion. He solved his problem by a simple hard-facing application and, by so doing, saved his department much valuable time and money.

If you have a vivid imagination, you'll be able to make out that this is a very poor photograph of a long-necked welding tip applying hard-facing material to a worn sprocket clutch—(we'd call it a dog-clutch).—H. C. F.

Nine sprinkler trucks, all of the same type, are used by this city in flushing its streets. Each one of these trucks is confined to a certain city district and a rigid schedule calls for a daily flushing of each district. The sprinkler mechanism of these trucks is operated by means of double centrifugal pumps which derive their motive power from the drive shaft of the truck by means of a clutch attached to the main drive shaft just beneath the driver's seat. The operator engages this clutch when a portion of the roadway is to be flushed. In order to throw in the clutch properly, the truck itself should be at a standstill or barely moving, otherwise the sprockets do not mesh properly, with the result that a constant repetition of this wrong practice tends to wear down the sprockets along one side.

The clutch wore down in this manner in about 2 months' time, and as a new clutch cost about $40, a means of eliminating this expense was sought. The solution was found in the application of a hard-facing metal to the worn sprockets, building them up to their original size.

A noteworthy feature of the job was the fact that the entire repair was accomplished without dismantling the driving shaft and transmission. This long drawn out and costly procedure was formerly necessary each time a new clutch was installed. The time factor involved in the latter procedure can be fully appreciated when it is stated that it took a good mechanic a week's time to change clutches. In the meanwhile a truck was laid up and a district neglected. The hard-facing repair took but 2½ hours. The cost of rod, gases and welding operator's time was trivial in comparison. Not only was this clutch reserviced quickly and economically, but also a lasting repair was effected which will give many times the life of the steel clutch.

The welder experienced no trouble in applying the long-wearing alloy. It was rather awkward for him to get his blowpipe into welding position under the truck, but the use of a long-neck type welding tip facilitated matters considerably. During the hard-surfacing operation, as a precautionary measure, the exposed parts of the truck, such as the drive shaft, the gear shift mechanism, and the gasoline mechanism and also the tank, were carefully covered with a liberal blanket of damp asbestos paper so that there could be no possibility of the welding flame causing any damage.

When metal parts continually work on each other, the resulting wear is often sufficient to necessitate frequent and expensive replacements. This is especially true in the automotive industry and would present a considerable problem if it were not for the application of abrasion-resistant alloys to reduce wear to a minimum. The automotive industry has been quick to take advantage of the possibilities of hard-surfacing and is solving many of its maintenance problems by means of this modern method for reducing wear.

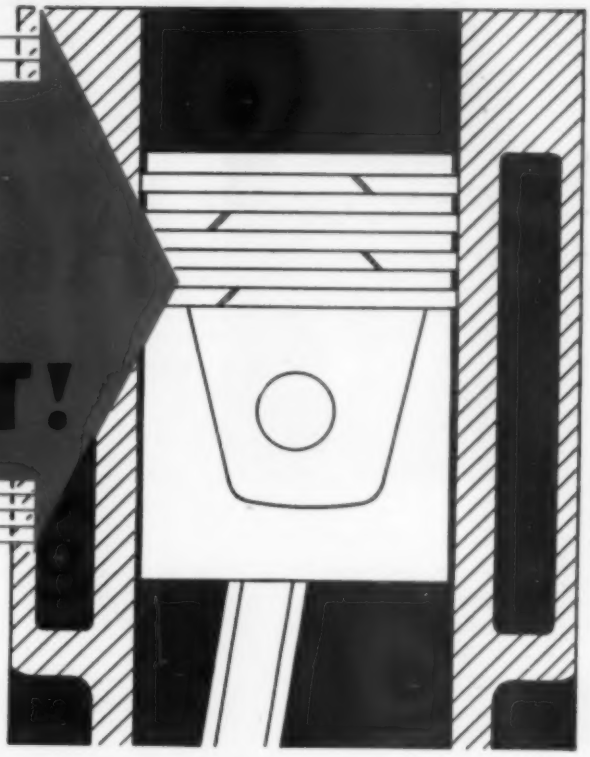
The material used in hard-facing is known as "stellite", a non-ferrous, abrasion-resistant alloy of cobalt, chromium and tungsten. It is readily applied by the

(*Please turn to page* 55)

STRIKE AT THE HEART OF OPERATING COST!

BY INSTALLING

Pedrick PISTON RINGS



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AND A TECHNICAL SERVICE SHOWING HOW TO SELECT AND INSTALL IT!

Gone are the days when oil loss need be an important factor in maintenance cost. Gone are the days when you have to guess and experiment with Piston Rings. For into the design of the PEDRICK line has come a new *principle —Hydraulic Action*—which has completely revolutionized Piston Ring performance. Now, with absolute assurance, every condition can be successfully overcome. And the Pedrick Technical Service, written in simple, understandable style, assures the selection of the correct ring for every need and its proper installation. For complete information, mail the coupon today.

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Wilkening Manufacturing Co.

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Say "I saw it in FLEET OWNER"—It Helps!

...a Course *in* Automotive Ignition

By M. Mallory

Article XXVI—Why Contact Points Burn Out Prematurely

FLEET owners and mechanics have been taught to believe that the ignition coil or condenser is the cause of burning of circuit breaker points, but, in many cases, it is not the coil that causes the trouble. There are other things that cause this trouble. Perhaps, the design of the cam and circuit breakers cause more trouble than the coil itself.

One thing that causes excessive flashing is rebound and chatter of the contact points when they close. For illustration, refer to Fig. 1. It is practically impossible to prevent a rebound when two hammers are brought together, especially if the pivot point is a long way from the hammer, as indicated by the two hands. As these hammers are brought together to close the circuit, they rebound, which tends to break contact. In other words, the contact is made when the hammers are brought together, and is broken by the rebound. Even though the contact is not entirely broken by the rebound, resistance is set up between the two contacts, which causes fusing, flashing and heating of the contact points.

If a circuit breaker were used, as shown in Fig. 4, on next page, the rebound would be greater, because the pivot pin and rubbing block on the circuit breaker is located a great distance from the contact point. The greater this distance, the greater the rebound, because the speed of the contact point on the breaker arm is high, due to being located a great distance from the pivot. This high speed causes a harder blow to be struck, and, in turn, a greater rebound. It can be seen by this, that a circuit breaker having the rubbing block and pivot located a great distance from the contact point will cause excessive arcing to take place, due to rebound and chattering as the points close.

Creeping of the contact points when they close and break is another thing that causes them to burn and flash. See Fig. 2 on next page. In many cases where there is excessive contact trouble, it will be found that the circuit breaker pin, indicated at A, is undersize, or the bushing in the circuit breaker, indicated at B, is worn. This causes the contact points to creep when they close, and creep when they break; constantly disturbing the surface of the contact points, which causes continuous arcing.

To prove this, run a distributor without the cap attached and move the circuit breaker lever up and down. It will be seen that excessive flashing will take place. If the circuit breaker pin, indicated at A, is undersize, it will do no good to put on another circuit breaker, because the bearing will still be too loose. In Fig. 3, this same condition is shown, only it shows the contact points creeping in the other direction as indicated at C.

Contact points should close and break clean without any rubbing or creeping, and should close at the same point every time, instead of varying over the surface; otherwise their life will be shortened.

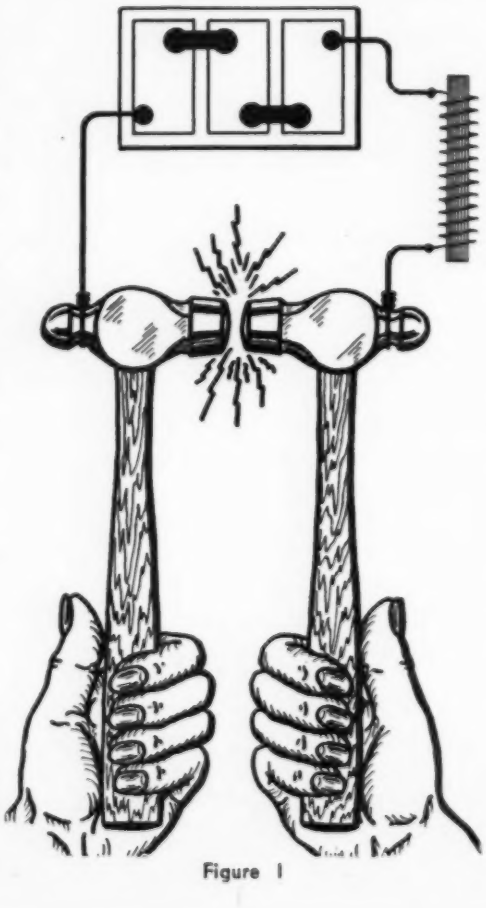

Figure 1

Another thing that will cause creeping is the strength of the circuit breaker lever and the bracket that carries the stationary contact point. If the circuit breaker lever is long and has a tight spring tension, it will have a tendency to spring before it breaks contact, and to spring when it makes contact. This causes creeping of the points. If the bracket that carries the contact point, indicated at C in Fig. 3, is not strong enough, it will also move when the contact closes and breaks, which causes the surface of the contacts to be disturbed.

Let us refer to the circuit breaker in Fig. 3 again. This has a ratio of two-to-one. The rubbing block pressure must be twice that of the contact pressure; that is, if a contact pressure of 18 oz. were required, the rubbing block pressure would be 36 oz. This means that a stiffer spring must be used on the circuit breaker, and that more wear will take place on the rubbing block.

In this type of circuit breaker,

(*Please turn to page* 36)

HOW TRUCK OWNERS CAN SAVE MONEY ON OIL!

STARTLING ECONOMY FIGURES BROUGHT TO LIGHT DURING EDDIE PULLEN'S AMAZING 6598 MILE TEST RUN WITH A 2½ TON LOAD

WHEN Eddie Pullen climbed out from behind the wheel of his V-8 Ford truck after completing a 6598 mile test run, experienced truck owners opened their eyes with wonder at the economy facts he laid before them.

Eddie Tells About it!

"We carried a pay-load of 2½ tons on a Ford 1½ ton truck. More than 360 miles were second and third gear lugging up mountains. Hundreds of miles were across the boiling Imperial Valley desert. And yet the actual oil consumption of PENNZOIL SAE 20 was only *one pint* per thousand miles. Got 13.14 miles per gallon of gasoline! PENNZOIL helped us turn in a total gas and oil record of only $.0057 per ton-mile!"

Uses Regular PENNZOIL

This remarkable economy record was made with a regular grade of PENNZOIL — the same PENNZOIL you can buy for *your* trucks. PENNZOIL is *3 times concentrated.* This gives it an amazing tough-film and better lubricating qualities. "Engine-drag" is reduced, giving you a freer, easier running motor that uses less gas.

HIGH SPOTS OF EDDIE PULLEN'S AMAZING 6598 MILE TEST RUN

Distance	6,598 miles
Time	Ten days, 24 hours a day
Average Speed	30 miles per hour
Oil	Pennzoil SAE 20
Oil Consumption	One pint per 1000 miles
Gas Mileage	13.14 miles per gallon
Truck	Ford V-8, 1½ ton
Pay-load	5,280 pounds
Total Cost	$.0057 per ton mile

100% Pure Pennsylvania PENNZOIL Safe Lubrication

Member Pennsylvania Grade Crude Oil Association, Permit No. 2

Get a full report of Eddie Pullen's run —the test that amazed experts. Learn how PENNZOIL is *right now* cutting operating costs for hundreds of fleet owners the country over. You can get these facts, without cost or obligation. And they'll show you how to mark up new profits. Write today—or use the handy coupon if you prefer.

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A COURSE *in* AUTOMOTIVE IGNITION *(Continued)*

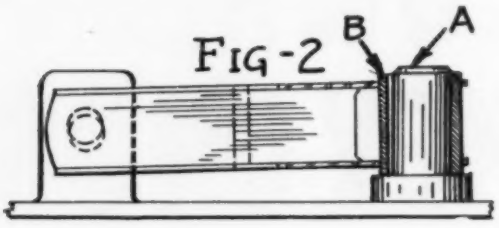
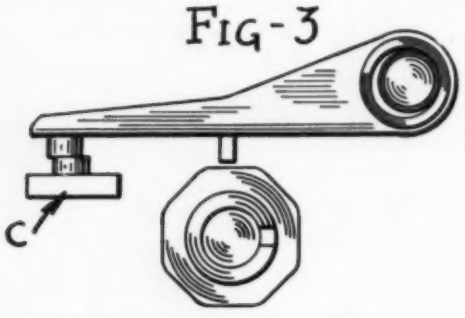


FIG-2

.001″ wear on the rubbing block will cause .002″ variation between the contact points, and there is more wear on the rubbing block with a circuit breaker of this type than there is on a breaker having a one-to-one ratio, due to the greater pressure necessary to maintain sufficient contact pressure. This greater pressure also causes the circuit breaker lever and stationary contact to bend when the circuit breaker makes and closes the circuit, and, in turn, causes creeping of the contact points, which results in excessive burning.

Take a circuit breaker lever having rubbing block pressure the same as the contact point pressure. If the contact pressure is 18 oz., the rubbing block pressure will be the same, which reduces the wear, and, if the rubbing block is worn down .001″, the contact point spacing will change only .001″. With this design, the speed of the contact point travel is lessened, which reduces the rebound.

FIG-3

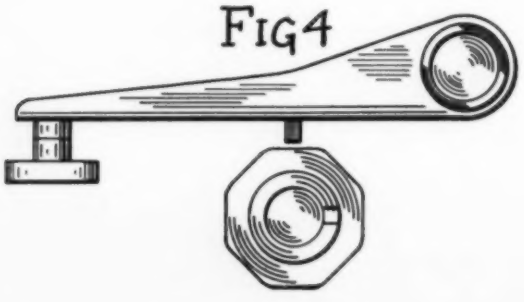


It is also possible to make the arms more rigid in this design, which prevents them from bending when closing and opening, and the stationary contact point bracket can also be made very rigid. The result is that this design of circuit breaker causes less contact flash than the other types referred to.

To prove that this construction causes less flashing than other types, the following test is suggested:

Take two distributors having circuit breakers as indicated above. Space the contact points so that both distributors will give the same contact dwell in degrees. Then, use one coil in making both tests. Although the same amount of current is flowing through both distributors, it will be seen that the one having a circuit breaker with a two-to-one ratio will show the most flashing.

FIG4



It is also the opinion of many that a coil that produces a long hot spark, causes burning of contact points. In fact, the trade has been taught this by some engineers, but it is not altogether true.

Some claim that long and hot sparks cause contact point trouble. A long spark may not be hot at all, and a hot spark may not be long. Long sparks indicate voltage, and hot sparks indicate current. There are coils that produce long sparks that are hot and there are coils that produce long sparks that have little heat

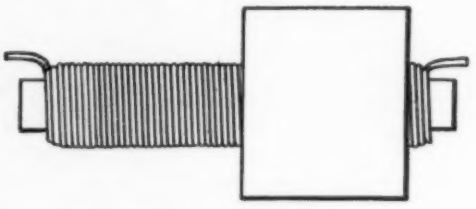


FIG-5

in them, but neither can be used to judge the coil as to whether or not it will burn contact points.

If this were true, contacts in a magneto would last only a short time, because the sparks from a magneto are several times as hot as the sparks from a battery ignition system, and it is well known that contact points in a magneto require less attention than in most battery systems.

Contact point trouble caused by the coil is due to the design more than the characteristics of the sparks. A coil might produce weak sparks and still burn contact points. For example; see Fig. 5. This coil would produce weak sparks and would burn contacts, because the secondary covers only a small portion of the primary,

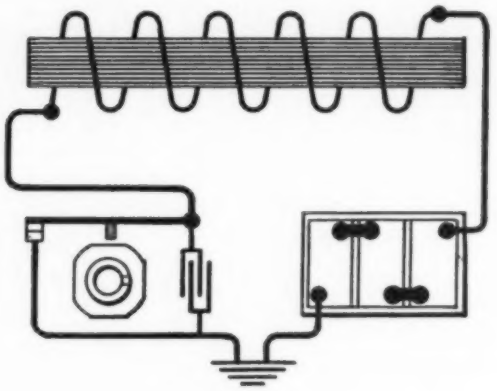


FIG-6

and the surge of current in the primary is much greater when the contact points break, because the secondary winding being over only a small portion of the primary does not tend to hold the coil in choke to prevent a sudden surge.

If there was no secondary on the primary winding, as shown in Fig. 6, the arcing would be excessive, because the surge in the primary would be greater without a secondary unit around the coil. It is the current

(Please turn to page 55)

A Missouri Company

..they asked to be "SHOWN"

So we studied their routes, and their busses. Analyzed the causes of brake failure. And made definite recommendations. Now they are standardized on J-M Brake Linings.

The far-flung routes of the great Missouri Pacific Transportation Company serve eight states. Their huge fleets of busses, of varying types, encounter all kinds of roads, every variety of operating conditions. Invariably their brakes function safely and dependably, brake mileage is excellent, brake costs low. They have standardized on J-M Brake Linings.

THE Missouri Pacific Transportation Company admitted that brake lining performance on their busses might be improved. They were interested in our brake linings. But as was to be expected from a Missouri organization, they asked to be "shown."

So our brake experts visited terminals. Examined worn brake linings, and the drums from which they had been removed. Studied the requirements of the different routes, and the various types of busses.

Thorough analysis of the data thus secured was followed by detailed recommendations. And presently the Missouri Pacific Transportation Company admitted that we had "shown them." *They standardized on Johns-Manville Brake Linings.*

Excellent brakes now

Adopting the types of J-M friction materials recommended as most effective for varying types of busses, differing conditions of service, they have materially bettered brake performance.

Brakes are safe and thoroughly dependable; brake mileage records excellent.

If you are not fully satisfied with brake performance, if you are faced with any specific brake problems, you, too, are invited to avail yourself of our coöperation. There is, of course, no charge, no obligation. And our engineers may be able to save you a great deal of trouble and annoyance; effect a worth-while improvement in your brake mileage.

May we send you the J-M Brake Reliner's Manual? It contains 124 pages of helpful information on relining, adjusting, trouble-shooting. And it's free. Mail the coupon. Johns-Manville, 22 E. 40th Street, New York City.

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Say "I saw it in FLEET OWNER"—It Helps!

TROUBLE SHOOTER

(You Ask 'Em — We Answer 'Em)

A department, devoted to correspondence from readers of FLEET OWNER. Any questions having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

"How to Clean Up" in Oil

Question: We have among our vehicles four trucks of G. M. C. make; two T-18A, one T-23B, and one T-51WB. Whenever we change the oil in these trucks we note that the oil is very black when it is drained.

Even after we have changed the oil, and these trucks have gone about 25 miles, the oil is so discolored that it would seem to one who did not know, that the oil had not been changed at all.

All of these trucks are equipped with oil filters and air cleaners. The mileage to date ranges from 4,000 to 12,000 miles. We are using a first quality Pennsylvania oil with a national reputation and would appreciate any suggestions you may have to make.— V. & P., Lawrence, Mass.

Answer: From the early mileage which you state these trucks have been run, we have a hunch that you did not as yet change the cartridges in the oil-filters. This should be done about every 8,000 miles, or whatever the directions on the unit call for.

When new oil is run through a dirty oil-filter, there is every reason to believe that it can become discolored easily, and we would not be surprised if that was your difficulty. This is not to be considered as a reflection on the efficiency of the oil-filter, however. You can't expect it to function properly if you neglect it.

It is also possible that your crankcases have accumulated quite a bit of sludge, particularly after a hard winter. Have you tried flushing them out with power and special flushing oil? If you are not equipped to do this, you might have it done by one of the local oil-company filling stations. Or, you might drop the oil-pans and see for yourself.

We do not believe it characteristic of the oil you mention to become discolored so easily. It's like wading around in the mud with "ice-cream pants" on. It can't be done without getting dirty.

●

Can't Find the Grease Retainers?

Question: We are having trouble with a 1929 Pontiac coupe throwing grease into the brake lining. We are unable to find any grease retainers any place. Could you please advise us?—H. W. R., Monmouth, Ill.

Answer: We presume you are referring to the rear wheels. This car used the same rear axle as the Oakland for 1929. Hyatt bearings are used for the rear wheels, and double oil seals were originally provided. One of these, at least, should be found in the wheel hub. Why not go to your local Pontiac dealer and get the correct seals? It is possible that the original ones were left out, or previously discarded.

●

Uses of Alcohol Explained

Question: Regarding the short item on page 20 of the February issue, I am interested in the various uses of alcohol about the shop. An explanation of the application of alcohol for removing carbon from cylinders and water from gas tanks would be of interest to us.— L. A. W., New London, Conn.

Answer: Carbon removal by the alcohol method is fostered by the alcohol makers, who have issued an interesting leaflet showing how this is done. We are sending you a copy by mail. This circular also tells how sticky valves may be loosened up by injecting alcohol through the carburetor intake.

There are two methods suggested for removing water from gasoline tanks with alcohol. One is to pour about 2 quarts of 188-proof denatured alcohol into the tank, which need not be drained of gas. The motor can then be continued in operation without further attention.

The other method is to drain the gas tank and then put about a gallon of alcohol into it. Then the tank should be again drained, and replaced with new gasoline. We seem to prefer the former method.

Should other readers desire a copy of the leaflet entitled *"Removing Carbon With Alcohol"* a line to the Editor will bring a free copy. We have a small quantity of these on hand for free distribution. First come, first served.—*Editor.*

You May Not Believe It!

(And We Don't Blame You)

JOHN CITIZEN, on the way to his office, extended the customary 3c for a newspaper and was told the price now was 4c. "It's the tax," explained the vendor. "We ought to charge you 4.14c but the boss says we'll pay part. He was here awhile ago to see what the other papers were doing. Said he heard one sheet was bootleggin' at the old price."

Headlines led Mr. Citizen's eye to a news item explaining all about the new taxes. "Effective today," he read, "sales taxes of 38 per cent will be collected upon all merchandise sold at retail.

"The tax rate is fixed at the same level as the tax on gasoline. Since gasoline now retails at an average price of 13.2c per gallon, and average taxes are imposed at the rate of 4.2c per gallon by the state and 1c by the federal government, the total average tax is 5.2c, or 38 per cent.

"The gasoline tax originally was imposed to finance the cost of highways, but the income now is being used for various other purposes. Similarly, income from the new general tax will be used for general purposes."—A. P. I.

TRUCKS · BUSES · PASSENGER CARS · RACING CARS

TOUGH METAL FOR TOUGH GOING

● Ray Day Pistons are made from the toughest light alloy ever used in pistons. Ray Day metal combines all the weight advantages of light alloy with the wearing qualities of cast iron. And Ray Day's patented design prevents any possibility of skirt distortion, the cause of nearly all piston troubles. Equip your fleet with Ray Day Pistons *now*—for better performance, long life and economy. Ray Days cost no more than ordinary pistons. You will be interested in the Ray Day complete piston service. Let our engineers consult with you on any piston problems—they have helped many leading fleet operators. Ray Day Piston Corporation of Detroit.

RAY DAY METAL

is an aluminum alloy light in weight with high heat conductivity. Tensile strength 50,000 to 55,000 lbs. per sq. inch. Brinell hardness of 140 to 160. All the weight advantage of light alloy with the wearing qualities of cast iron.

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RAY DAY PISTONS

RAY DAY PISTONS ARE STANDARD EQUIPMENT ON MANY OF THE FINEST CARS, BUSES AND TRUCKS

Say "I saw it in FLEET OWNER"—It Helps!

TROUBLE SHOOTERS' DEPARTMENT (*Continued*)

Engine Maker Volunteers Information—Thanks!

TO the Editor: "I note an inquiry in your Trouble Shooter Department, February 1934 issue, regarding the methods used in making engine dynamometer tests.

"Our usual dynamometer tests for power are made *without* the accessories, such as generator, starting motor, fan and fan belt; but our tests are calibrated so as to show the loss of power when these accessories are installed.

"With each engine a power-curve is issued and on the specification sheet the power losses are set up for the various types of accessories. These losses are based on actual tests. For example on the 20R engine, the following power losses are anticipated:

Accessory	*H. P. Req'd. at Max.*
Fan—20" diameter	2.2
Generator	1.0
Air Compressor	3.0
Velocity Governor	1.0
Air Cleaner and Equipment	1.7

"These dynamometer tests are made on engines where it is necessary to have the dynamometer reading, or on the development of new units. The usual 'run-in' test is not quite so elaborate. These tests are made to determine whether or not the engine meets the power requirements, and may be run with or without accessories, depending on the customer's specifications for each individual order.

"The power curves are also obtained under average heat conditions, and are corrected according to the S. A. E. correction formula, which makes allowances for outside conditions."—*H. W. Overman, Continental Motors Corp., Detroit, Mich.*

●

New Fuse Check Book Shows Losses

THE matter-of-fact procedure of replacing blown fuses is a real cost and should be investigated by every shop. For this purpose the Westinghouse Electric and Manufacturing Company has issued a Fuse Check Book which makes it easy to obtain an accurate and permanent record of the waste that may occur in the shop whenever a fuse blows. By itemizing the facts on blown fuses over a short period, it is possible to evaluate the lost time of men and machines.

The man renewing the fuses can fill in the number and sizes of the fuses, the number of men and machines made idle, and the approximate lost time in minutes, as shown in the illustration. With this information the cost or accounting department may obtain the total cost of blown fuses using average value for man-hour and machine-hour costs.

Fuses, the weakest link in electrical distribution systems, are becoming obsolete and in many instances being replaced by NoFuze De-ion circuit breakers which give fuseless protection with complete safety and maximum production. Write the Editor for further details if interested in same.

We Think You'll Lose Money on This

Question: We are confronted with an operating problem which needs a great deal of consideration. The question is, can a 5-ton dump truck be profitably operated at a revenue or income of $18.00 per day? It will work 8 hours per day and the driver will get $7.50 per day. Average mileage covered will amount to 50 miles per day. We have our own ideas but would appreciate any of your suggestions. Our cost sheets are not definite enough for us to accept or reject the work at this figure.—McN. & C. Co., Chicago, Ill.

Answer: Even without knowing your costs, we are inclined to say "No"—and we would not advise you to accept the job at this figure. The only way to prove it to yourself is to analyze your costs and see just what your expenses will be.

Truck costs come under the headings of "Fixed Charges" and "Operating Charges." Those expenses coming under fixed charges include depreciation, interest on investment, insurance, license, taxes, garage rent and general overhead. The operating charges include driver's wage, gasoline, oil and grease, tires and maintenance. If you have a slight idea of what these costs are in your fleet, it should be easy to compare them with your revenue, and see if there will be anything left for profit.

For the sake of example, it might not be amiss to quote some estimates of the operation of a 5-ton truck in city operation. Of course these figures, (like any figures) can probably be "shot full of holes" by someone else, but we are quoting them because they are typical and they may be used merely as a basis—we've got to start somewhere. Here they are, and remember they apply to a 5-ton truck, operating 50 miles per day in the city:

Total Fixed Charges	$5.72	(Incl. depr., int., license, taxes)
Total Maintenance Charges	3.75	(Incl. rent, repairs, overhead, etc.)
Total Running Charges	9.48	(Incl. wages, gas, oil, tires)
Operating Cost per Day	$18.95	(Not including general overhead)

To the above figures it might be well to add about 7 to 10 per cent for overhead, superintendence, etc. You can see, therefore, that you would not only make no money at $18.00 income per day, but would *lose* money. You, or someone else, might be able to "beat" these figures; they are simply average figures and approximate ones. But if you have no records to go by, they will serve as something tangible from which to work.

The Editor would be glad to hear from other truck operators on this subject. It is quite possible that by cutting costs, here and there, lower figures could be arrived at, but we believe that in the end, increasing costs would offset any temporary savings. We would say that $30 per day is what your revenue should be for a 5-ton dump truck that is being subjected to strenuous service.

●

Sales Position Wanted (Adv.)

EXPERIENCED sales representative seeks connection with automotive manufacturer as representative in the New York Metropolitan territory and vicinity. Have intimate following among fleet managers and service men. Highest references available. Address E. B., care Editor, FLEET OWNER, 90 West St., New York City.

At Last!

HERE IT IS

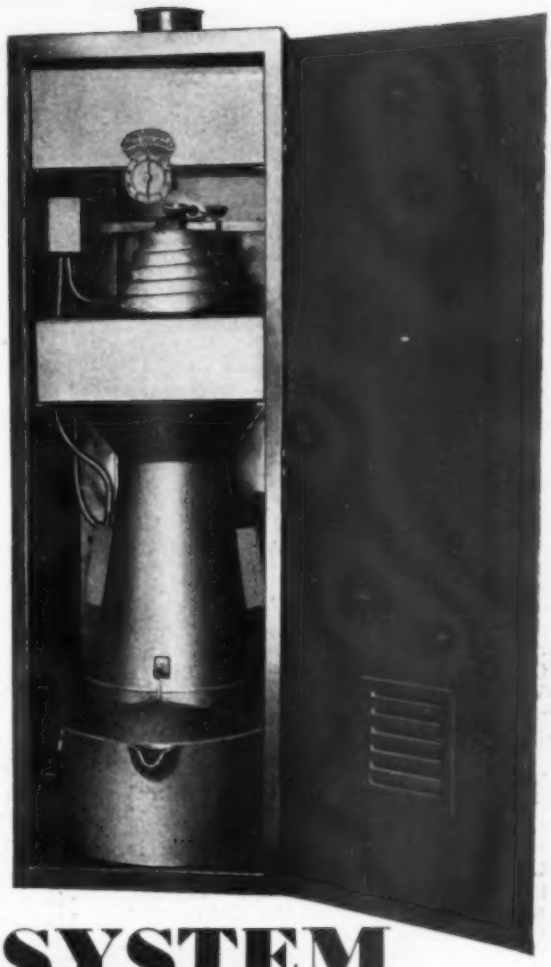
A Simplified — Fully Automatic

OIL RE-REFINERY

Electric — No Flame —
Safe — No Moving Parts

***Makes Your Crankcase Drainings Better Than New Oil*—Does It At A Cost Of Less Than 6¢ PER. GAL.**

Oil does not wear out. To remove the dirt, moisture, gasoline and acidity that cause it to become an inefficient lubricant—the Perfex-Oil System employs the three necessary recovery processes.



The PERFEX • OIL SYSTEM

Highest Efficiency and 3 Times The Capacity of Anything Near Its Remarkably Low Price. *Send The Coupon NOW* ⟶

It Processes Chemically by treatment with salsoda in the agitator and settling tanks. This removes the heavier suspended matter and corrects acidity.

It Distills by an extremely simplified, automatic, fool-proof operation. Distillation is by electricity—safe—no flame—no pressure—no vacuum hazards. No moving parts. Just set the dial for weight oil wanted.

It filters automatically through Fullers earth and filter pads. This removes all solids, clarifies, improves color.

Fleet Owners—operate your own re-refinery with 10 minutes a day of a shopman's time. Look into it now. Send for laboratory analysis showing Perfex processed oil better than new oil. See what users say about better quality and amazing savings. Investigate the remarkable Perfex-Oil System before you invest in any re-refinery.

DISTRIBUTORS WANTED

PERFEX-OIL RE-REFINERY SYSTEM
Centropolis Station, Kansas City, Mo.

Send full information regarding Perfex-Oil Re-Refining System.
We drain ..... gals. of oil per month.

Firm Name .....

By .....

Address .....

City ..... *State* .....

Say "I saw it in FLEET OWNER"—It Helps!

as WE GO to PRESS

(News of the Truck Industry)

A NEW, light-weight, fast electric truck has just been announced by Walker Vehicle Company, Chicago, Ill. Two types of chassis are available—straight frame for department store, laundry, wholesale bakery and dry-cleaning service; and low aisle (or drop-frame) for retail milk, bakery, grocery and other house-to-house service. Both chasses, with the exception of the frame are essentially of the same construction. Body designs reflect the modern tendency towards streamlining as well as practical adaptation to service conditions. Walker Vehicle will be glad to furnish interesting literature.

•

TWO new motor fuels were announced last month by Cities Service. One is Cities Service Ethyl; the other, Koolmotor Gasoline. This is the first time that Koolmotor, a premium gas, has been sold at regular prices. It also marks the Company's entry into the Ethyl market. Introduction of these new products follows the completion of a three-year research campaign conducted by the Company.

•

A NEW 6-cylinder engine of 450 cu. in. displacement is announced by General Motors Truck Company, Pontiac, Mich. Like other engines in the GMC line, it is of valve-in-head design. It develops a maximum of 340 foot-pounds of torque over a speed range of from 800 to 1200 r.p.m. and 120 h.p. at 2300 r.p.m. This engine will be used in GMC Model T-84, a new truck in the 8-ton capacity range. Specifications will be cheerfully sent on request.

•

THE largest production month in the history of the company is announced for February, by Packard Electric Corporation, Warren, Ohio. Over one-and-a-half billion feet of copper wire had been drawn in their wire drawing plant. If all of this wire, drawn and shipped during February, had been used in making 16-gauge lighting or ignition cable, for instance, it would have reached the total of 58 million feet, or 11,000 miles—nearly one-half the distance around the earth at the equator.

•

THE Wilkening Manufacturing Company, Philadelphia, Pa., makers of Pedrick piston rings, announces the appointment of W. F. Terry as manager of its Western New York territory. Mr. Terry, who formerly was wholesale sales manager for Armor-Krause, Inc., of Pittsburgh, succeeds Mr. Floyd Lindsley.

TWO new, low-priced models are announced as additions to the 1934 Plymouth line; they are known as the Standard models and are available in coupe and coach body types. All of the basic Plymouth engineering features are incorporated in these cars, factory engineers point out. They will appeal especially to the field of commercial users—that vast army of operators reached by this publication. If you want details of these new cars, Harry G. Moock, sales manager of Plymouth will be glad to hear from you. Address him care of Plymouth at Detroit.

•

ARRANGEMENTS have been made for the Kleiber Motor Company of San Francisco and Oakland to distribute Studebaker trucks in nine counties of California. Kleiber will continue to manufacture and sell its own line of trucks, however. This piece of news is the third one of its kind in which other truck makers in different localities will distribute Studebaker trucks.

•

REPORTING a distinct uplift in the motorcycle business through government and police orders, the Indian Motocycle Company also announces a new, high-speed streamlined model, the Indian Sport Scout, with a 2-cylinder, 45 cubic-inch engine, independent front wheel springing, low center of gravity, lighted instrument panel, automatic dry sump oiling, and a new multiple-disc clutch operating in oil. Further particulars will be supplied by Indian Motocycle Co., Springfield, Mass.

•

AS of recent date, C. E. Hedges has been appointed district manager of the Memphis Territory of the Thermoid Rubber Company. The Memphis zone covers western Tennessee, the entire state of Arkansas, and the greater part of northern Mississippi. By the same order, A. H. Styron has been transferred from Memphis to Atlanta, Georgia, as district manager in the Atlanta Division.

•

APPOINTMENT of Sam Fikani is announced, to the newly created position of Western Division Manager for Wilkening Manufacturing Co., makers of Pedrick piston rings. For several years Mr. Fikani has been manager of the Pacific Northwest territory for the same Company. The California territory is now divided into two parts, with H. O. Wright in charge of the Northern territory and Bob Griffin in charge of the Southern territory.

THE latest, revised edition of the "Official Motor Freight Guide" has just come off the presses. It is a very complete and comprehensive directory of motor freight lines, terminals and merchandise warehouses, stated to be essential to traffic managers, truck operators, manufacturers and all concerns shipping by truck or dealing with the motor freight industry. It gives lots of other pertinent information, the details of which are too great to describe here. If you are interested, the publishers will send details. Address, Official Motor Freight Guide, 732 W. Van Buren St., Chicago, Ill.

•

EFFECTIVE March 1st, Bloomingdale's, one of New York's largest and most progressive department stores, has decided to use United Parcel Service for all of its package deliveries, according to a dispatch recently received from United Parcel Service Headquarters.

•

THE Mechanics Universal Joint Company announces a new line of anti-friction roller bearing replacement universal joints. The new "Mechanics" joints are now available for the Models AA, BB and V8 Ford trucks. They will be distributed through the Borg-Warner Service Parts Company, Chicago, Ill., who'll be glad to send you all information on the subject.

•

A FORM of fluid coupling, sometimes called the "fluid flywheel," is being put through tests by Eaton Manufacturing Company, Cleveland, O. The fluid flywheel is really a fluid coupling, and does not supplant the flywheel. It does, however, take the place of the clutch and does the work of the clutch in what is said to be a better manner. The firm mentioned above has prepared a very interesting description of it, which we could not find space for, in this issue. If you write them, they'll be glad to send you a copy.

•

A NEW air-cooled engine has been added to the line of Doman-Marks Engine Company, Amesbury, Mass., manufacturers of direct air-cooled engines for trucks, tractors and industrial purposes. This model is known as 6A-400 and has 4⅛-inch bore and 5-inch stroke. It develops 111 h.p. at 2,600 r.p.m. Among the advantages claimed for these engines is the lack of the customary cooling system troubles, experienced with water-cooled jobs.

SKF EQUIPPED
BUILT BY
MACK TRUCKS, INC.

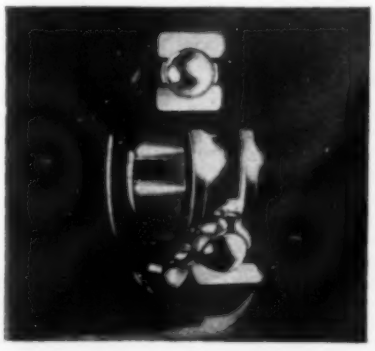
ECONOMY GOES HAND IN HAND WITH SKF

▼ ▼ ▼ DEPENDABILITY

"Ample power to maintain the most difficult schedule with a *startling economy of operation*," says Mack of their Model BC six-cylinder bus for city service. The italics are ours because SKF Bearings have an important job on this bus. They certainly play a part in keeping the power plant at its highest efficiency with the lowest cost per bearing mile.

On many vital bearing locations of this Mack bus, SKF's assure smooth performance throughout a long life. There's no need of bearing adjustments... and that means uniform efficiency of inter-related parts. SKF ruggedness is ample security for hard service and uninterrupted schedules in hundreds of thousands of miles.

●You may buy a bearing at a bargain but try and get a bargain out of using it, for nothing is apt to cost so much as a bearing that cost so little



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SKF INDUSTRIES, INC., FRONT ST. and ERIE AVE., PHILADELPHIA, PA.

SKF
Ball and Roller Bearings

Say "I saw it in FLEET OWNER"—It Helps!

JOHN LAW SEZ:

(Recent Court Decisions as Reported by National Highway Users Conference)

ARIZONA

Re Automobile Liability Insurance

AN automobile liability insurance policy covering persons "legally operating the automobile" includes an unlicensed driver. "The term 'legally operating the automobile' means operating it by right or by lawful authority, rather than operating it in accordance with law."—*Universal Automobile Ins. Co. v. Benoit. Cir. Ct. of App. Ninth Cir.*

CALIFORNIA

Bus Passengers, Prima Facie Case

BUS passenger makes out prima facie case that corporation owned bus and that driver was employed by it acting in the regular course of business when he proves that at the time of the accident the bus was registered with the motor vehicle department in the name of the corporation.—*Irwin v. Pickwick Stages System, Inc., et al, 25 P. (2d) 998*

KANSAS

Contributory Negligence

WHETHER bus passenger who allowed elbow to protrude through window two or three inches beyond side of bus was contributorily negligent when injured as a truck struck the bus held a question of fact for the jury.—*Fike v. Huguenin, et al, Sup. Ct. 28 P. (2d) 721.*

KANSAS

Re Liability to Guest Rider

GUEST injured when driver, while traveling on improved 18 ft. highway struck abutment of a cement culvert, could not recover under the Kansas guest statute which precludes recovery unless the driver was guilty of "gross and wanton negligence." The court held that the statute contemplated something more than mere negligence, that the wantonness is "the conscious disregard of or reckless indifference to the probable or natural consequence of the misconduct."—*Stout v. Gallemore. Sup. Ct. November 11, 1933.*

MISSISSIPPI

Owner Liable for Driver's Negligence

TRUCK owner held liable for driver's negligence where driver had been acting in capacity of his superior foreman and directed laborer to ride on running board of truck and who was thereby injured.—*Russell vs. Williams, Sup. Ct. of Miss., 150 So. 528.*

NEW JERSEY

Neglect of Alighting Passengers

WHERE passenger alighted from moving car without using reasonable care in looking for on-coming traffic before walking to sidewalk, and was struck by an automobile, he was held guilty of contributory negligence precluding recovery. There is no duty on the part of common carrier to warn passengers alighting from car of the traffic conditions on the roadway.—*Trimboli vs. Public Service Co-ordinated Transport et al. 168 A. 572.*

OHIO

Bus Franchise Rights Violated

UNDER a license ordinance, the City of Cincinnati had imposed taxes on the Cincinnati Street Ry. Co. The company brought action against the city to enjoin it from the collection of the license tax and to recover the amount paid, contending that under a prior ordinance the city had granted a renewal for 25 years of franchise, which was accepted by them in writing, permitting them to operate buses, and in imposing on them additional regulations, violated the company's contractual franchise rights. The Court of Appeals held that the plaintiff company was entitled to recover amount of taxes paid without interest.—*City of Cincinnati et al v. Cincinnati Street Railway Co., Ct. of App. 187 N. E. 312.*

OHIO

Must Obtain Chauffeur's Licenses

ACCORDING to a recent ruling of the Attorney General, bakery drivers must obtain chauffeurs' licenses. If the man owns the truck and the baked goods belong to the bakery, he must take out a license, but if the baked goods belong to himself, no license is required.—*Baker's Helper, Jan. 13, 1934, p. 39.*

OREGON

Rider Recovers from Truck Driver

GRATUITOUS passenger was allowed to recover damages for personal injuries from truck driver who was guilty of gross negligence. There was evidence that the driver was driving at the rate of 35 to 40 miles per hour on the left side of a winding highway where his vision was obstructed and that in trying to avoid an approaching car, his truck overturned which resulted in injury to the plaintiff, from which the jury reasonably inferred that he was guilty of gross negligence. "Gross negligence" is defined as "conduct which indicates an indifference to the probable consequences of the act."—*Younger v. Gallagher et al, Sup. Ct. of Oregon, 26 P. (2d)* GRC.

PENNSYLVANIA

Common Carriage—What Included

"THE towing of wrecked cars for repair is not common carriage."—*In re: Application of Frank Martz, Public Serv. Commission, Registration Docket No. 13, December 4, 1933, Pa.*

TEXAS

Car With Defaced Numbers

PERSON who buys an automobile knowing that the identification numbers had been removed and numbers of dismantled truck substituted thereon cannot acquire any valid title to such automobile. Such automobile cannot be rebuilt with parts of other junked automobiles in order to be registered as a "rebuilt" automobile.—*Gabert v. Eastus, Ct. of Civ. App. 62 S. W. Rep. (2d) 618.*

VIRGINIA

Sudden Emergency Constitutes Defense

WHERE passenger is injured in accident, bus driver can escape liability on the ground of sudden emergency if he was free from negligence.—*Safety Motor Transit Corporation v. Cunningham Sup. Ct. of Va. 171 So. 432.*

VIRGINIA

Can Start Bus Before Seated

CITY buses are not required to wait until all passengers are seated before beginning on their route. The Court said, "To require bus and street car companies in cities to wait until all normal passengers are seated before starting their vehicles would unnecessarily delay the users of these means of transportation in reaching their destinations, without appreciably adding to their safety."—*Scott v. Cunningham, Sup. Ct. of App. of Va. 171 S. E. 104.*

YES...

Autocars are finished with SHERWIN-WILLIAMS OPEX

Trim and shining in its dress of shining lacquer, the Autocar parade is constantly on the road in every state, in every weather. Factory-finished with Sherwin-Williams Opex, every Autocar starts out its life with a clear, true color that is durable and holds its gloss in spite of sun and rain. A quality truck demands a quality finish!

Higher gloss, heavier film and easy working qualities make S-W Opex the ideal finish for all fleets whose schedules will permit no frequent laying up for refinishing. Less rubbing, smoothing and polishing are required, as coats flow on smoother, due to the high solid content of the film.

Get This FREE Finishing Service

Sherwin-Williams Finishing Engineers specializing on specifications for fleet service will be glad to help you make your paint dollars go farther. They will work out finishing specifications for your fleet without cost or obligation. Write the Sherwin-Williams Company, Dept. 623, Cleveland, Ohio.

SHERWIN-WILLIAMS AUTOMOTIVE OPEX FINISHES

Say "I saw it in FLEET OWNER"—It Helps!

READER SAY-SO

(Picked at Random from The Editor's Mail-Bag)

We Could Ask No More

"WE, that is, my men and I, appreciate FLEET OWNER a great deal; mainly because of its instructive articles, its thoroughness of advertising and the very nominal cost of receiving it each month, which amounts to filling out an occasional blank.

"And, speaking of advertising, I wish to state that your little magazine is the medium which brings me in contact with many products I would otherwise know nothing about, and believe me, that means a lot to one in the automotive business of maintaining a fleet at the lowest figures possible. I read the advertisements as thoroughly as I do the articles. Thanks for FLEET OWNER."—*H. R. Caradine, Garage Supt., County Garage, El Centro, Calif.*

●

Graphite Article Clicks

"DEAR Editor:—Your article on graphited lubricants in the March issue is very timely, as we have purchased several new trucks and are undecided about using a product of this kind. We wish to thank you very much for past favors, as we have received a lot of good pointers and have learned many things from your magazine FLEET OWNER."—*W. L. Lillie, Delivery Supt., The LaSalle & Koch Company, Toledo, Ohio.*

●

Finds Every Copy Interesting

DEAR Mr. Fischer: "I have been reading with great interest for the past year, every copy of FLEET OWNER and have found many helpful suggestions in same. The various articles regarding fleet operation, shop practice and accounting fill a need that has long been neglected in the business of fleet operation. We operate a fleet of 49 trucks and 5 passenger cars at this branch."—*Charles Farquhar, Shop Foreman, Sheffield Farms, Inc., Orange, N. J.*

Marines Tell It to Us

"WE are mailing to you the piston ring questionnaire, properly filled out. We want you to know that we consider your magazine, FLEET OWNER, a most remarkable and valuable one."—*C. J. Eldridge, 1st Lieut., U. S. M. C., Quantico, Va.*

●

"Lots of Good Ideas"

"WE find lots of good ideas in your publication, FLEET OWNER. It is very much appreciated by us. We operate a fleet of 16 trucks."—*T. A. Monroe, Supt., Buttercup Ice Cream Co., Hamlet, N. C.*

●

The Same to You!

"AT this time we would like to state that we receive FLEET OWNER each month and appreciate it very much. It contains many interesting and helpful articles and suggestions. Wishing you continued success for your splendid publication in 1934."—*E. J. Fitzmartin, President, Binghamton Taxicab Co., Binghamton, N. Y.*

●

Would Hate to Miss It

"YOUR magazine, FLEET OWNER, is a splendid one and I would hate to miss it. We would appreciate being kept on your regular mailing list, as we operate a fleet of 35 trucks and 35 passenger cars."—*H. A. Oldroyd, Vice-Pres., June Dairy Products Co., Inc., Newark, N. J.*

●

Short and Sweet

"I HAVE looked over your magazine and consider it very worth while. I would appreciate it very much if you would continue to send it to me at the above address."—*C. S. Reynolds, Secretary, Pacific Highway Transport, Tacoma, Wash.*

An Honest Opinion

"DEAR MR. FISCHER:—As a reader of your magazine, FLEET OWNER, I shall confidentially express myself freely. The informative material between the covers of FLEET OWNER, and the absence of 'professional writers' justifies the expense for paper and ink. The authoritative expressions on fleet maintenance by fleet maintenance men themselves, do more than merely justify the sheet; they make the —— thing readable."—*Edw. J. Simpson, Supt. of Equipment, Interstate Power Company, Dubuque, Iowa, operating a fleet of more than 200 autos, 25 buses and approximately 30 trailers.*

●

A "Question-of-the-Monther"

"WE like to assist in surveys such as you conduct in your Question-of-the-Month Club and will say that we read the reports with much interest. We operate a fleet of 20 trucks."—*C. W. Brooks, Mgr., Ark Warehouse Co., Arkansas City, Kans.*

●

Liked the January Issue

"BEING a reader of FLEET OWNER, I wish to inform you that the January issue has been very beneficial to me. Thanking you and trusting that I shall continue to receive it regularly, I am—"—*N. D. Wagener, Shop Foreman, Thompson Bros. Ice Cream Co., Butler, Pa.*

●

"Last, But Not Least"

"WE would like to receive one of the Reo slide-rules showing truck capacities, etc., and last, but not least, permit us to offer our sincere appreciation for the excellent construction of your publication FLEET OWNER."—*H. L. Beverly, Automotive Engineer, Standard Oil Company of California, Oakland, Calif.*

To widen the scope and use of BENDIX POWER BRAKES *new models have been added at* LOWER PRICES

- Fully Controlled Power Operation
- Least Weight Added
- Fewest Added Parts
- Lowest First Cost
- Practically No Maintenance
- Instant Remote Control
- All Emergency Features of Train Operation
- Quickly Installed
- Original Brake System Left Intact
- Nation-wide Service

CONTINUALLY increasing nation-wide demand for Bendix B-K Controlled Vacuum Power Brakes has made advisable a further broadening of the scope of Bendix Power Brake application. New models are now available at considerably lower prices, opening new sales possibilities for Bendix dealers—new economy for operators. Get the new listings and see how reasonably you can modernize a truck or bus to more than meet the "toughest" brake laws!

For more than ten years Bendix B-K Power Brakes have been demonstrating their worth—keeping thousands of trucks and buses out of trouble.

They are time-proved. And they cost no more than unproved or makeshift auxiliary equipment. Read the ten big reasons for installing Bendix B-K Power Brakes. Then write for the full facts. Bendix provides nation-wide service facilities to truck, bus and passenger car owners.

BENDIX PRODUCTS CORPORATION
401 Bendix Drive South Bend, Indiana
(Subsidiary of Bendix Aviation Corporation)

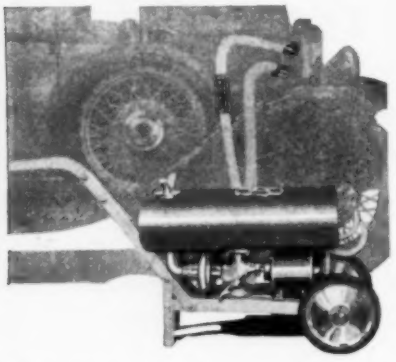
96% OF ALL POWER BRAKES ARE BENDIX

Say "I saw it in FLEET OWNER"—It Helps!

for ROAD *and* SHOP

For Flushing Radiators and Blocks

TO the man not acquainted with New York City, the words "Flushing Long Island" might appear to be an immense job for the street-cleaning department. To the average fleet operator, the term "Flushing Radiators" also might appear to be somewhat of a hardship.



But not with the machine illustrated here, the makers point out. It enables fleet operators to do systematic radiator and cylinder-block flushing at regular intervals and should provide low-cost insurance against trouble on the road this Summer, to say nothing about delayed deliveries and expensive overhaul work.

This machine will do, they tell us, a complete job on any kind of car, truck or bus, regardless of construction. It can flush or reverse-flush cylinder-blocks and radiators, separately or together. And from the top or the bottom, too.

Since this machine is said to make an erstwhile troublesome job, simple, easy and quick, it might pay you to write for their interesting literature, which will be sent without obligation. Just mention FLEET OWNER, please, and address Marquette Manufacturing Co., Minneapolis, Minn.

●

Recent Brake Lining Development

THE Thermoid Rubber Co. of Trenton, N. J., is announcing a service stock of 4 rolls of their new FML Brake Lining for fleet stations and garages.

The company states that this assortment is sufficient to service 95% of all types of both internal and external brakes and will reduce inventory investment.

This has been made possible by the development of a new Thermoid process for controlling friction in the lining itself, according to the makers, who will gladly send complete details on request.

●

"Glazoil" Concentrated Lubricant

THE Glazoil Products Company of Cleveland, Ohio, recently introduced GLAZOIL, a new concentrated lubricant in pint, quart, gallon and drum packages. The principals of the company, having extensive experience in the lubrication and jobbing fields, include M. I. and N. C. Cotabish, formerly connected with National Carbon Company.

Glazoil is added to regular oil and gasoline. It contains, it is stated,

certain elements that "glaze" all moving parts and frictional surfaces, establishing a positive film of protection. Glazoil is claimed to reduce friction, cut costs of operation, and revitalize the motor. For further details and small working sample, address the maker, stated above.

●

Valve Seat Inserts by Toledo

TRUCK and bus fleet operators will be interested in the new Toledo Chro-Mo-Loy valve seat inserts recently placed on the market by The Toledo Steel Products Company.

Toledo valve seat inserts are made from chromium-molybdenum-silicon alloy with heat-resisting properties. No cement or mechanical aids are required to keep these inserts in place. Expansion conforms to that of the cast iron cylinder block and, therefore, remains tight at all times. The press-fit is allowed on the diameter of the insert; only a spinning operation is required after installation.

Toledo valve seat inserts are said to be free from distortion or warpage. Special heat-treating operations allow the inserts to remain stable at temperatures in excess of engine requirements. These inserts are of exceptional hardness, even at high temperatures, providing greater resistance to wear and less pick-up of carbon on the valve seats, it is claimed.

Complete information on Toledo Chro-Mo-Loy valve seat inserts may be secured on application to The Toledo Steel Products Company, Toledo, Ohio.

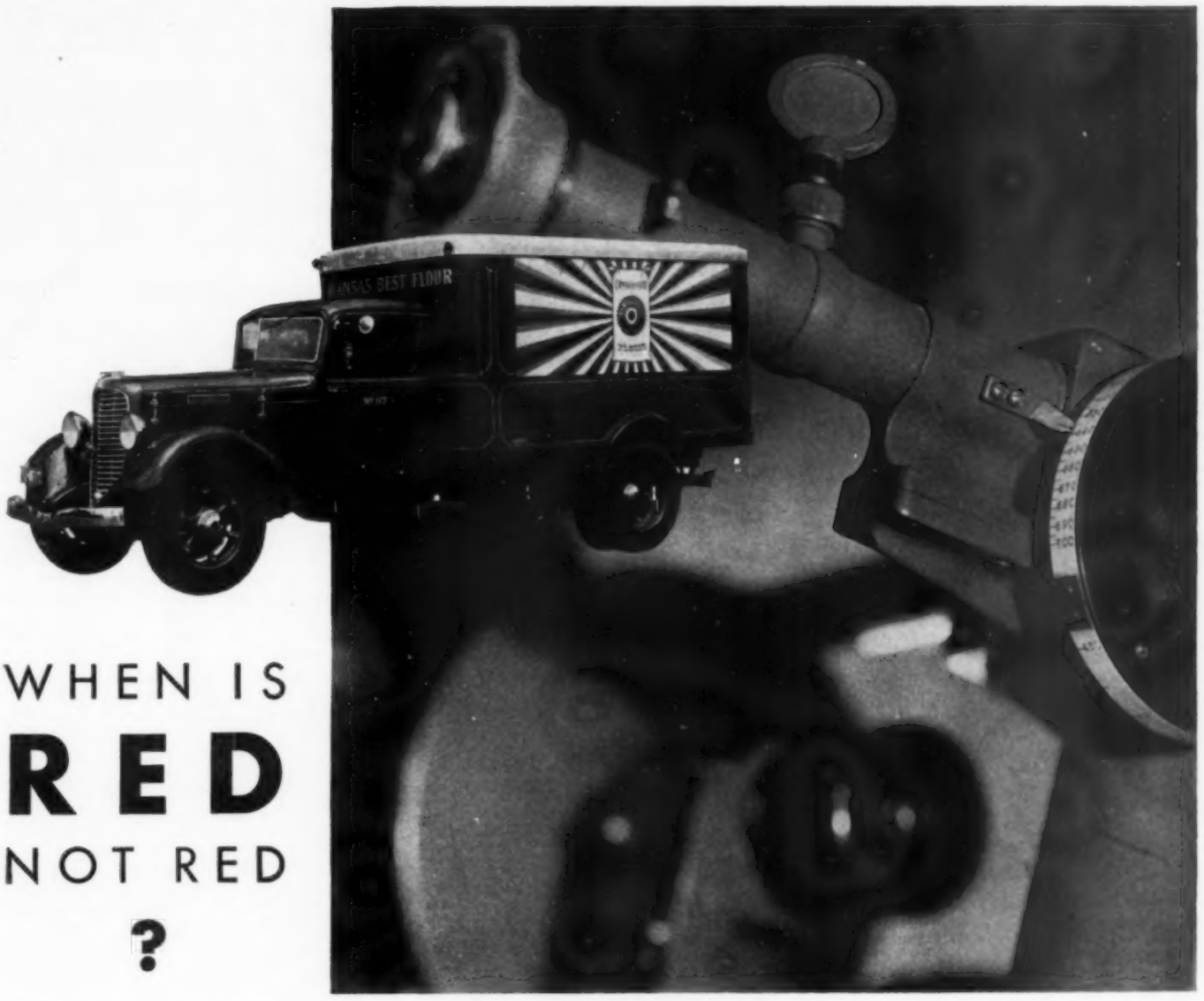
●

Data on Heavy-Duty Batteries

AN eight page booklet, "Specifications and Data for Bus and Truck Service Batteries" has just been published by The B. F. Goodrich Rubber Company, Akron, Ohio, and is now available upon request.

The booklet describes the new Goodrich line of truck and bus service batteries, introduced a short time ago, gives the guarantee and adjustment policies, specifications and replacement data on batteries for all models of busses, trucks, fire trucks, taxis and tractors, as well as complete drawings showing assembly plans for each type of service.

Goodrich batteries for commercial vehicles were placed on the market following the company's successful introduction of its "Electro-Pak" and other batteries for automobiles. When writing for the free booklet, mention of FLEET OWNER will be appreciated.



WHEN IS **RED** NOT RED ?

For lasting good appearance and color the Consolidated Flour Mills Co. specified du Pont Automotive DULUX for its trucks. The Color Analyzer helps to assure the uniform high quality of DULUX for all trucks.

Pre-Testing assures your getting uniform color just as it makes certain of the other superior qualities of du Pont Automotive DULUX as a finish for your trucks

TWO REDS may seem equal in value to the eye. But the eye test is not completely accurate in comparing two tints or shades of the same color. Du Pont uses a more scientific method to assure the color uniformity of its finishes.

With the Color Analyzer shown above, it is possible to chart a color graphically. A standard red color is thus established. Samples of red are taken from daily production . . . are charted and compared with the standard. If they do not check, then du Pont chemists do something about it. Every batch of that particular red must be uniform.

An "O. K." for DULUX

The Color Analyzer and other instruments are part of the du Pont System of Pre-Testing, which is important to you. They guard the uniform high quality of Automotive DULUX, the special du Pont finish for trucks. They check the color, hardness, drying time, resistance to weather and general durability of DULUX *before* you use it. They take guessing out of manufacture. They eliminate costly uncertainty in selecting a durable, colorful, economical finish for your fleet.

Many truck owners are proving the established super-qualities of Automotive DULUX every day. Because of lasting smart appearance, greater resistance to weather, gasoline, oil and mechanical injury on the road, DULUX ranks as an outstanding development among all finishes—a leader among *automotive* finishes.

Automotive DULUX can easily be applied with spray or brush in your own refinishing shop or by an Authorized du Pont Refinisher. If you like, we will gladly help you work out standard DULUX specifications for your fleet. Many owners have taken advantage of this free service. For further information, address E. I. du Pont de Nemours & Co., Inc., Dept. F-4, Finishes Division, Wilmington, Delaware.

DU PONT —AUTOMOTIVE— DULUX
REG. U. S. PAT. OFF.

DU PONT MAKES A COMPLETE LINE OF AUTOMOTIVE REFINISHING MATERIALS

Say "I saw it in FLEET OWNER"—It Helps!

NEW STUFF *for* ROAD *and* SHOP (*Continued*)

New Type Charter Drive

A NEW type of Charter-Starter-Drive is announced by Burgess-Norton Mfg. Co., Geneva, Illinois (Licensees). This new drive combines all the important features of the original Charter Drive which, it is claimed, will eliminate sticking, jamming, and chewing of flywheel starter gears.

The spring is now a double-coil, double-hook type, with five to ten times the life and strength of the old spring, according to tests in the Burgess-Norton laboratory, and in actual use on trucks. It is now practically unbreakable, the makers declare. Another important improvement is the new one-piece pinion.

The new type has been tested thoroughly before being put into production, both in the laboratory and in the field. Jobbers are now supplied with complete stocks of the new drives in all parts of the United States and Canada. The manufacturer, mentioned above, will be glad to send full details. Mention of this publication will insure prompt service.

●

Jack for Knee-Action Wheels

THE demand for a jack that will handle cars with knee-action wheels is answered by The Blackhawk Mfg. Company, with their S4 jack, illustrated here.

This is *not* a new jack, it having been on the market for over two years. It is only four inches from the ground at the saddle, and a 20-inch lift gives it a total height, when elevated, of 24 inches.

This great amount of lift provides plenty of room to work on springs, brakes, etc., without using blocks, hoist or crane, the manufacturers point out. Address your inquiry to Blackhawk Mfg. Company, Milwaukee, Wis. Mention of FLEET OWNER will be appreciated by them and us.

Valve and Guide Catalog is Offered

THE Toledo Steel Products Company, manufacturers of Toledo valves, valve guides, valve seat inserts and water pump parts, announces a new 1934 catalog.

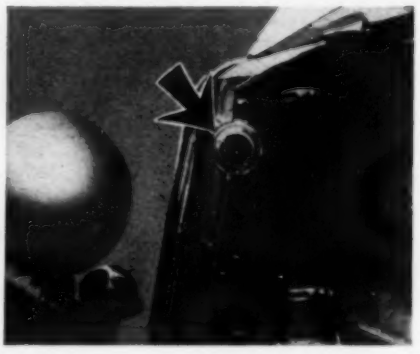
This catalog contains an alphabetical list of cars with the proper Toledo valve and valve guide numbers for each make and model. In addition, it contains a master numerical list, a numerical dimension chart and a progressive dimension chart for both valves and guides. Passenger cars, trucks, buses, taxicabs, tractors, motorcycles, motors and marine engines are completely covered.

A copy of the new Toledo Valve and Valve Guide Catalog may be secured by writing the Toledo Steel Products Company, Toledo, Ohio. Mention of FLEET OWNER will speed up delivery of your free copy.

●

"Camel" Provides Closed Radiation

THE installation of the Cuno "Camel" on the radiator overflow pipe of any car, truck or bus, will provide closed radiation. This device consists of a diaphragm valve which



normally remains closed and thus prevents all ordinary loss of water or steam in summer, and anti-freeze in winter, according to the makers.

Should any abnormal condition develop, to cause boiling to the extent that venting is required, the monitor valve automatically opens to the required degree, and at the same time produces a whistling sound which notifies the driver. When the boiling condition is relieved, it automatically closes.

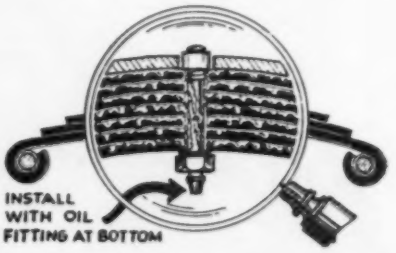
Another advantage claimed is that it will not be necessary to stop for water at remote points, and thus possibly contaminate the cooling system of the vehicle with water of questionable quality as to alkali, minerals, etc. Still another is the fact that in high altitudes vehicles can be operated without the customary cooling system troubles usually attributed to the altitude.

Models are now available for the heavy-duty field, including trucks, buses, road-building machinery and other units using water-cooled systems. Literature and other descriptive matter will be sent on request.

The Cuno Engineering Company, Meriden, Conn., will be glad to send these to you. Mention of FLEET OWNER will help speed up your inquiry.

Lubricates Ford Rear Springs

FLEET operators will be interested in the Walker Lubricator which provides means of lubrication for rear springs of all Ford cars. Lack of lubrication causes dry, rusty springs which is the cause of most spring failures. Annoying squeaks also develop.



The Walker Lubricator is cadmium-plated to prevent rust. It is hollow-drilled with Alemite-Zerk oil-fitting. Square nut at top fits into recess in frame at top. Extra long threads fit all 1932 and 1933 Ford rear springs.

To install, simply remove nut of old center tie bolt. Knock out bolt with punch and hammer. Insert Walker Lubricator with square nut at top. Take up tight with deep socket wrench or open end wrench. Grease thoroughly with either S.A.E. 110 or 160 gear oil and for real stubborn cases mix small quantity of penetrating oil with the gear oil.

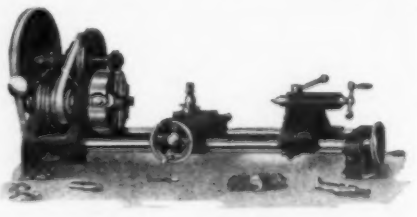
If your jobber can not supply you write direct to Walker Specialty Sales Co., 1406 South Grand Ave., Los Angeles, Calif., for further information.

●

Low-Priced Shop Lathe

FOR the fleet operator not caring to spend a large sum of money for a complete machine shop, the Series 200 Lathe, illustrated here, is an ideal piece of equipment, the makers point out.

Many operations are possible with this lathe and adapters, so that it may be used as a drill press, milling machine, boring mill, grinder, etc., for both metal and wood working.



Armature turning, valve refacing, making pins, bushings, sleeves, guides, etc., are just a few of the automotive jobs that can be done.

For complete description of assembly, construction, list price and other details, an interesting circular has been prepared, which will be sent on request. Write to Swayne-Robinson & Co., Richmond, Ind. Mention of this publication will help identify your request.

THEY TAKE IT—AND LIKE IT

No punishment is too tough for Toledo Super-Forged Guaranteed Valves. For Toledo Valves are tough themselves—so tough that they are guaranteed to stand up in even the hardest service.

GUARANTEE

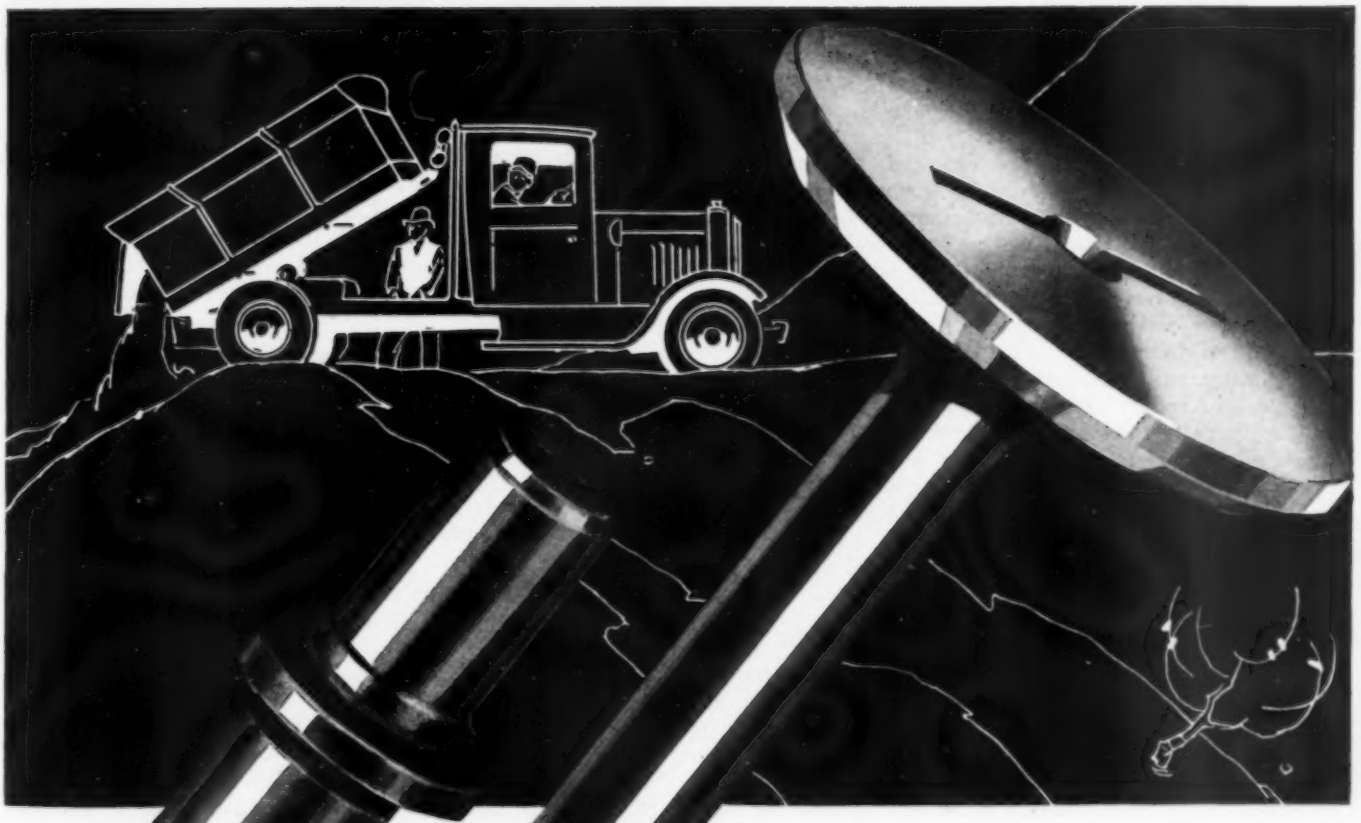
Toledo "Type S" Super-Forged Valves are guaranteed. Your jobber will give you, without charge of any kind, a new valve in exchange for any Toledo "Type S" Super-Forged Valve which proves defective in service.

Toledo Valve Guides are of high quality, too. For best results, and for full-powered performance, equip your fleet now with new Toledo Guaranteed Valves and new Toledo Valve Guides.

THE TOLEDO STEEL PRODUCTS COMPANY, TOLEDO, OHIO, U. S. A.

New York, 17 W. 60th Street » Chicago, 1225 South Wabash Avenue » Atlanta, 279 Ivy Street, N. E. Dallas, 2805 Commerce Street » Kansas City, 14th and Oak Streets » Los Angeles, 1341 South Hope Street » San Francisco, 528 Larkin Street » Portland, 408 N. W. 12th Avenue » *In Canada: The Toledo Steel Products Company, Ltd., 2-10 Bresdalbane Street, Toronto*

TOLEDO



The Guaranteed Valve

Say "I saw it in FLEET OWNER"—It Helps!

QUESTION of the MONTH

"By far, one of the most valuable departments to be found in any automotive publication. Every fleet man should be delighted to cooperate."—A Reader

Some of the Interesting Replies to the Piston Ring Question (No. 41).

Interesting Data from U. S. Marines

"OUR piston rings are changed neither on the time nor mileage basis. We keep accurate check on the oil used, inspect motors regularly and periodically for knocks, slaps, and poor compression, and whenever a motor knocks, slaps, uses excess oil with loss of compression, we change the rings.

"Many of our vehicles are models of 17 years ago and have no speedometers or odometers and we can only estimate the mileage. From our experience we estimate the average life of piston rings as follows:

Passenger cars	15,000 Miles
Light trucks	15,000 Miles
Heavy trucks	10,000 Miles

"We always renew pistons at the same time new rings are installed. Our pistons are bought in the rough and are finished to meet our needs. Symptoms for ring replacement are pumping of oil, loss of power, and piston slap.

"Whenever our pistons are renewed, we recondition the cylinders. The cylinders in large trucks are reground, while we use a boring bar on the passenger vehicles and light trucks. We have a honing outfit, that we formerly used sometimes, but since we have our boring bar, we never use the hone.

"We never attempt to cure oil pumping and piston slap by the installation of piston rings without reconditioning the cylinders. We always use the type rings as are recommended by the manufacturer.

"We operate 104 vehicles which includes passenger cars, light and heavy cargo trucks, 1-ton to 5-ton dump trucks, heavy wreckers, tractors, motor-cycles, and trailers."—*C. J. Eldridge, 1st Lieut., U. S. M. C., Quantico, Va.*

●

50,000-Mile Ring Performance on Taxicabs

"WE get about 50,000 miles per set of piston rings on the 50 General Motors Taxicabs in our fleet; and about 100,000 miles per set of pistons. At this latter mileage it becomes necessary to recondition the cylinders, which is done by regrinding.

"Symptoms calling for new rings include the consumption of too much oil and missing of firing, caused by fouled plugs. Sometimes we cure oil pumpers by installing rings without reconditioning the cylinders. In all instances we use original equipment pistons and rings.

"Major engine overhauls are performed every 100,000 to 150,000 miles. We obtain our pistons and rings from the taxicab manufacturer."—*Frank P. Maguire, Treas., Cambridge Taxi Co., Cambridge, Mass.*

Plenty of Idling in Door-to-Door Fleet

"ON an average, we overhaul engines about every two years. Piston ring mileage ranges from 15,000 to 20,000 miles on passenger cars, from 18,000 to 23,000 miles on light trucks, and from 20,000 to 25,000 on heavy-duty trucks in our fleet.

"Piston rings are changed once on each set of pistons. Symptoms calling for piston ring replacement are lack of compression, oil-pumping and blow-by. Cylinder reconditioning is done anywhere between 20,000 to 40,000 miles. Ninety percent of this is done by regrinding; ten per cent by reboring.

"Only on rare occasions do we cure oil-pumping and piston slap by the installation of special rings without reconditioning the cylinders. Two sets of rings (original and one replacement set) are used before reconditioning. As our motors idle considerably, this cuts down the maximum mileage that might be obtained if we made longer runs between stops.

"We purchase our pistons and rings from automotive jobbers. Standard type rings are used on reconditioned jobs."—*J. E. Kreis, Supt. Vehicle Maintenance, Embassy Dairy Co., Washington, D. C., operating a fleet of 47 trucks, 4 passenger cars and 2 other vehicles.*

●

Wide Variations in Maintenance Practice Here

"AVERAGE mileage per set of piston rings, on both new and reconditioned jobs in our fleet, amounts to as follows:

Passenger Cars	—35,000 Miles
Light Trucks	—35,000 Miles
Heavy Trucks	—None Operated
Buses	—None Operated

"We change piston rings once per set of pistons; that is, we use one set originally and then replace with another set of rings before discarding the pistons. Symptoms calling for new rings include oil pumping, fouling and blow-by.

"Cylinder reconditioning is necessary at about 45,000 to 50,000 miles on both types of vehicles in our fleet; the reboring method is used. When the engine is not in bad condition a popular make of oil ring gives good results in most cases. When reconditioned, plain rings are used. The jobber is our source of supply.

"Major engine overhauls are performed not more than once during the life of the vehicle. In a fleet of a large number of classifications, such as ours, there are wide variations in maintenance practice of this kind."—*Geo. A. Hogg, Supt. of Transportation, Scranton Electric Co., Scranton, Pa., operating a fleet of 30 trucks, 50 passenger cars and 18 other vehicles.*

A FEW MORE PISTON RING REPORTS (*Continued*)

Piston Ring Data in Heavy-Duty Fleet

"OUR heavy trucks are operated for a year, when new, before piston rings are installed. We change rings but once per set of pistons. The symptoms that call for early ring replacement are lack of compression and worn ring grooves, particularly the top ring.

"Reconditioning the cylinders is necessary every 15,000 to 20,000 miles on these heavy-duty units. The regrinding method is used. We have never had much trouble with oil-pumping. Sometimes we use one set of rings, besides the original ones; generally the rings last until the job is reground—one to two years on the average.

"Complete major engine overhauls are performed once a year. We leave the selection of the make of pistons and rings to the jobber who does the regrinding of the blocks.

"Our class of work is done mostly in the summer months. It consists of road work and work in the building line. In an average year our trucks are gone over completely during the winter months. In some of our jobs, we find burned pistons and cracked center main bearings, due to the strenuous working conditions of the vehicles.

"We sometimes move 35 and 40-ton excavating machines and it is then necessary to crawl along in low gear, making it very hard on the motors. Most of our jobs will go two years without rings, but at that time they will need a regrind job as well."—*G. H. Armston, Shop Supt., Frenzel Bros. Company, Chicago, Ill., operating a fleet of 20 trucks and 12 passenger cars.*

●

Rings Cure Oil Pumping; Not Piston Slap

"TWENTY thousand miles is our average per set of piston rings on passenger car engines; on bus engines it runs as high as 40,000. However, on new jobs we get 60,000 miles before changing rings.

"Symptoms calling for ring replacement are excessive oil consumption, lack of power, etc. Reconditioning of cylinders is done at 40,000 miles on the passenger cars, and at 125,000 miles on the buses. The regrinding method is used. Major engine overhauls are also done at this time.

"We do not do our own passenger car engine overhauls; it is far cheaper to exchange the worn engine for a rebuilt one. On the buses, we do the rebuilding but the cylinder grinding work is farmed out.

"Before reconditioning we use two sets of rings in the passenger cars and about three sets in the buses, depending on the pistons. We use a plain diagonal cut compression ring with an oil wiper ring in the passenger cars; in the buses we use four rings—three compression and one oil ring.

"Sometimes we are able to cure oil pumpers by controlling the oil with new piston rings only; but *not* piston slap. A heavy-duty oil ring does the trick in these cases. We obtain piston rings from automotive jobbers."—*Edw. J. Simpson, Supt. Equip., Interstate Power Co., Dubuque, Iowa, operating a fleet of 200 trucks, 25 buses, 24 passenger cars and 30 trailers.*

(Please tear out and mail to The Editor, The Fleet Owner, 90 West St., New York City)

Question No. 43—Fenders

Do you make your own fender repairs?.....Is this work farmed out?.....

Please check any of the following equipment that you have for fender work. (See below)

☐ Fender Hammers ☐ Fender Rollers Please list any others.....

☐ Dolly Blocks, etc. ☐ Welding Equipment .....

☐ Soft-Faced Hammers ☐ Fender Pry-Bars .....

When complete fender refinishing is required, do you use spray or brush?.....

What type of paint, enamel or lacquer is used for fenders? .....

Do you paint the under-sides of fenders?.....If so, how often? .....

Have any of your fenders rusted out prematurely, and on what cars? .....

When fender replacement is necessary, what is your source of supply? (Check below)

☐ Vehicle Manufacturer; ☐ Vehicle Dealer; ☐ Fender Jobber;

Has service on fenders from the above firms been satisfactory? .....

Approximately how many fenders do you replace per year? .....

What percentage is due to accidents?.....What percentage to rusting out?.....

Do you make any fenders yourselves?.....For what vehicles?.....

Any other remarks that you think would interest fellow-operators? .....

.....

.....

.....

We operate .....Trucks; .....Buses; .....Pass. cars; .....Other Vehicles

Note: If you cooperate with us and fill out this questionnaire, you will be entitled to a tabulated report covering all of the answers.

Swap your Maintenance experience with other fleet operators in this easy, convenient way. We do the work. You get the benefit.

Name of Firm .....

Address .....

City and State .....

Your name .....*Position*.....

160. **What Every Truck Owner Wants to Know About Spark Plugs.** There, in ten words, is the title. It's a free booklet just issued by one of the leading spark plug and electrical equipment manufacturers. You will save lots of correspondence and time, by indicating Number 160 on our coupon below, if you want a copy. And you can get any of the other books listed on this page, too, just by marking down the number. If that's not efficiency, we'll eat your hat, felt or straw.

•

161. **Eccentricity!** There's no substitute for it, especially when it comes to valve-seat grinding, according to many engineers and manufacturers. And that's the way we're supposed to reseat our valve seats, especially those of the new inserted or hardened type. But don't take our word for it. Ask our service department to send you complete information about this method. It can be easily done by indicating No. 161 on the coupon. And there'll be no obligation to buy anything. For your Editor's one-car fleet, we'll stick to our screw-driver, but *you* cannot afford to refinish valve seats by obsolete methods. It's *your* move!

•

162. **Don't Walk a Mile for a Camel-Back.** Just use the coupon below and Number 162 will bring you a complete set of literature covering one truck manufacturer's latest truck models of the "camel-back" type. Call them "cab-over-engine" models, if you will. Or, you might even call them "engine-under-cab" trucks. We don't care how you say it. But if you indicate it with "162", we'll know what you mean and the literature will come to you free, of course.

•

163. **A Street-Cleaner's Job.** That's what many people think when they hear the term "Flushing, Long Island." And it would be a huge job at that. Flushing radiators also might seem somewhat formidable to some fleet men, particularly if the radiator is a big one and it has to be removed from the vehicle and the hold-down bolts keep turning when you try to remove the nuts. We've all been in the same boat at some time or other, haven't we? But that's all a thing of the past, now, since power flushing equipment has been designed to clean out both radiators and cylinder blocks without removing either from the vehicle. An interesting circular has just been issued describing this outfit. If you want a free copy, Number 163 brings one.

WHAT DO YOU READ?

HERE'S a hand-picked assortment of literature that is offered to you entirely without obligation.

We've even made it easy for you to get it. Fill in the coupon below, mail to the Editor, and let us do the work. We'll ask them to send it at once and not to bother you with salesmen, either.

•

164. **More About Spark Plugs.** Here's another spark plug folder entitled "Commercial Type Champions". We'll give you one guess as to whose it is. This one shows the latest developments in heavy-duty spark plugs and gives recommendations (not ours) of the proper types to use in any kind of condition you may encounter. And since it's written in language that even your Editor can understand, you'll find it of interest and value. Number 164 secures a copy without obligation.

•

165. **All Things to All Men.** Sometimes that is expected of a publication. Sometimes it's expected of a paint or enamel. Here's one that is claimed to be equally suitable for wood or metal; to be easy to apply over old finishes; needs no polishing; is quick drying; retains gloss during its entire life; in fact whatever you've been looking for in a commercial vehicle finish. An interesting folder entitled "The Modern Finish" has recently been issued. Number 165 brings a free copy.

•

166. **Gasoline, Oil, Water, Air.** All vitally important to the operation of your fleet. But if you haven't the proper equipment for handling these important commodities, you're not only losing time but you're losing money, too! An interesting catalog that illustrates and describes a complete line of this stuff, from an oil measure to an air compressor, has just been issued by a firm in Conshohocken. But you don't even need to try to spell that word. Just put down Number 166 on the coupon and we'll get a copy of this catalog for you.

•

167. **Piston Pins and Valves.** Also other engine parts such as valve-guides, bushings, valve seat inserts, packless pumps, etc., are among the things you'll find in Thompson Products' latest catalogs. If your bookshelf or catalog file does not contain these, we'll see that you get them. But you'll have to help us by indicating your desires with Number 167.

•

168. **Comfort That Is Permanent!** Four words that mean a lot, if you consider how much it has cost you, last year for instance, to keep seat cushions in good condition. Take the strain of your drivers' backs. Take the strain off your cost-sheets, too! You can do both by equipping with the right seat cushions. And Number 168 on our coupon below brings an interesting folder that gives the "here's how". Get this and figure out how much *you* can save.

•

169. **The Trend to Alloy Pistons?** We don't know how many constitutes a trend, but one thing is certain. And this is that our Question-of-the-Month symposium on Pistons recently conducted, revealed a growing tendency towards aluminum pistons in all types of vehicles. And the choice was left to fleet men, not truck engineers. If, as it is said, aluminum pistons will lower your operating costs in 1934, you can take the first step towards proving it to yourself by asking for Number 169—the full details of latest developments in alloy pistons by one of the leading manufacturers. And it's all free for the asking.

•

170. **Truck Superiority?** A difficult thing to prove, especially since one man wants his 1½-tonner to be a husky work-horse, while another wants a fleety highway express. Just like you might like blondes and I would prefer brunettes. However, a new booklet entitled "Book of Truck Superiorities" has been issued and might serve as an excellent guide in the correct selection of your next trucks. Number 170 brings it, free, gratis and for nothing.

The Editor, FLEET OWNER, ...1934
90 West St., New York, N. Y.

Kindly send me without obligation, the following free books mentioned in the.....issue. (Literature will not be sent unless firm name is given.) Order by number.

....

....

Firm Name .....

Address .....

City and State .....

Your Name ..... Position .....

Salvaging Sprinklers' Sprockets

(*Continued from page* 32)

oxy-acetylene process. A flame containing an excess of acetylene is used, and the base metal is brought merely to a "sweating" heat. The hard-surfacing alloy is allowed to flow over the surface as does solder on a tinned surface. By this procedure, inter-alloying of the base metal and the abrasion-resistant alloy is held to a minimum.

This hard-surfacing application is but one of many in the automotive field which have proved to be real time and money savers. Whenever metal parts are subjected to wear, the application of abrasion-resistant materials will usually result in decided economies.

(*If you're interested in this salvage process, we'll be glad to put you in touch with the people who've developed it. The details will be interesting and "nobody will ask you to buy nothin'." Just drop a line to the Editor, and we'll see that you are promptly taken care of, without obligation.—H. C. F.*)

●

A Course in Automotive Ignition

(*Continued from page* 36)

flowing in the secondary unit that prevents a sudden collapse of the magnetic lines in the core of the coil. This has a choking action, which prevents such a sudden collapse of the magnetic lines that induces the current surge into the primary winding at the time the primary circuit is interrupted.

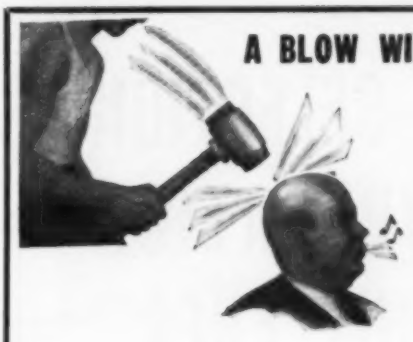
The number of turns on the secondary also has a lot to do with contact flashing. The greater the number of turns, the greater is the choking effect at the time the primary circuit is interrupted. This choking effect prevents such a sudden collapse of the magnetic lines within the core, and, at the same time, produces a spark of longer duration. A coil with a few turns on the secondary will produce hot sparks, but not high voltage sparks. These sparks will be of short duration, due to the small number of turns in the secondary, which permits a sudden collapse of the core. This is one kind of a hot spark, but there are other kinds of hot sparks that do not cause excessive contact flashing, therefore the life of contact points could not be judged by this characteristic of a spark.

A magneto spark is of longer duration than a spark produced by an ignition coil, because the magnetic waves in a magneto that produces the spark, continue from a positive maximum to a negative maximum, or vice versa. In a battery spark coil, the spark continues only from a positive maximum to zero, which makes the spark duration shorter.

The above explanation proves that the distributor contact points do not definitely limit the current input or the output of an ignition coil. The surges in the primary circuit, caused by the design of the coil and the design of the circuit breakers, have as much or more to do with the life of the contacts than anything else.

Some believe that hot sparks cause burning of the spark plug points. If this were true, magnetos would be impractical because they produce sparks containing from three to five times as much heat as a battery ignition coil. In the earlier days of the automobile, magnetos were used on practically all of them. A set of spark plugs were seldom changed, unless they ran too cold and became fouled.

To prove that the spark has little to do with spark plug burning, a spark plug can be connected to an

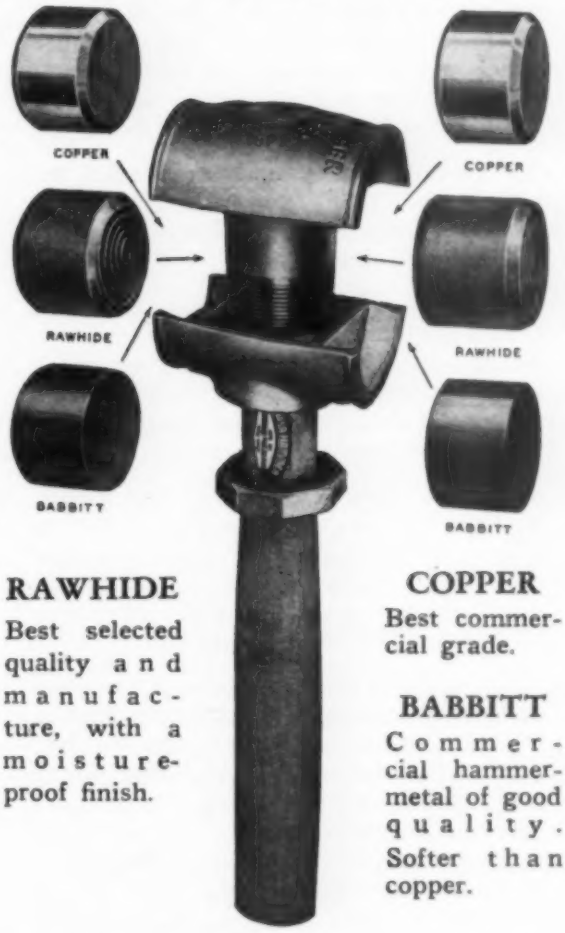


A BLOW WITHOUT A DENT

With the

"BASA" HAMMER

Any Combination of Faces Can Be Quickly Obtained



RAWHIDE
Best selected quality and manufacture, with a moisture-proof finish.

COPPER
Best commercial grade.

BABBITT
Commercial hammer-metal of good quality. Softer than copper.

In finishing and assembling work it is often desirable to use a hammer that can strike more than one kind of blow.

With the "BASA" HAMMER various kinds of faces can be used, making possible the desired combination of faces for any particular class of work.

Write for prices and full particulars

GREENE, TWEED & CO.

Sole Manufacturers

109 DUANE ST. NEW YORK

TRUCK SELECTION AND OPERATION TAUGHT FREE

★

More than a year ago the Reo Motor Car Co. instituted a School for Truck Salesmen. The purpose was to instruct these men in a new plan Reo had conceived for the sale of transportation—a plan by which the buyer was protected against incorrect and improper selling and the salesman was automatically restrained from mis-statements and "overselling."

The basic factors in the new plan were the Reo Ability Rating System and the Reo Truck Performance Gauge, with which most operators are now familiar.

The results of this training have been uniformly gratifying. Buyers everywhere have commended Reo salesmen for their ready grasp of hauling problems, their accurate analysis of facts, the unbiased logic of their recommendations.

Several large operators asked Reo if they might enroll some of their own men for the course. If Reo salesmen could be taught how to *sell* trucks correctly, they reasoned that their own men should benefit equally by learning how to *buy* correctly.

Reo now gladly extends this same invitation to all truck operators and their employees. We sincerely believe that the few evenings a week devoted to this grounding in the fundamentals of correct truck selection and operation will be well spent—as these other operators learned. There is no charge and, of course, no obligation whatever. Simply write Reo for details, using the coupon below.

REO MOTOR CAR COMPANY, LANSING, MICHIGAN

Please send me details of Reo Truck School. The following men in our organization are interested. F.O.4-34

Name_____
Position_____
Name_____
Position_____
Firm Name_____
Address_____
Nature of Business_____
No. of trucks operated_____

(Please Print Name and Address)

ignition tester, sending through it 2,000 sparks per minute. It would receive the same number of sparks as it would in an eight cylinder engine, turning 4,000 R.P.M. The chances are the points would not burn away enough after running the equivalent of 100,000 miles to make it necessary to even re-space them.

High compression is the cause of more spark plug burning than anything else, and in many cases, the mixture is too lean, causing burning of the valves and spark plugs.

●

Lighter Oils Advised for Breaking-In

OUTSTANDING news for purchasers of new cars is the recommendation of numerous automotive manufacturers that motor oils of approximately the same viscosity as those regularly prescribed for winter driving be used for the first two thousand miles of breaking-in the new models, even in summer.

This step represents a continuance of the trend toward lighter motor oils which lubrication authorities have been advocating for several years and which reached its peak last winter when the Society of Automotive Engineers recommended 10-W and 20-W for cold weather driving. Lighter than oils heretofore authoritatively favored, they have provided the most satisfactory lubrication yet obtained during the winter season, and definitely established the desirability of using lighter oils.

Considerations prompting automotive manufacturers to recommend oils as light as S. A. E. 20 for breaking-in new cars are analyzed as follows by lubrication experts of the Standard Oil Company.

"Although the engine surfaces in the new cars are well finished, they do have small portions, as in the cylinder bores, which have to be polished off by actual operation. During the first two thousand miles or so of engine operation when this polishing process is going on, clearances between the piston and cylinder wall are very small in spots. A lighter oil will penetrate these areas far better than a heavy oil, thus furnishing superior lubrication. After that period a slightly heavier oil is usually recommended solely from the viewpoint of oil consumption.

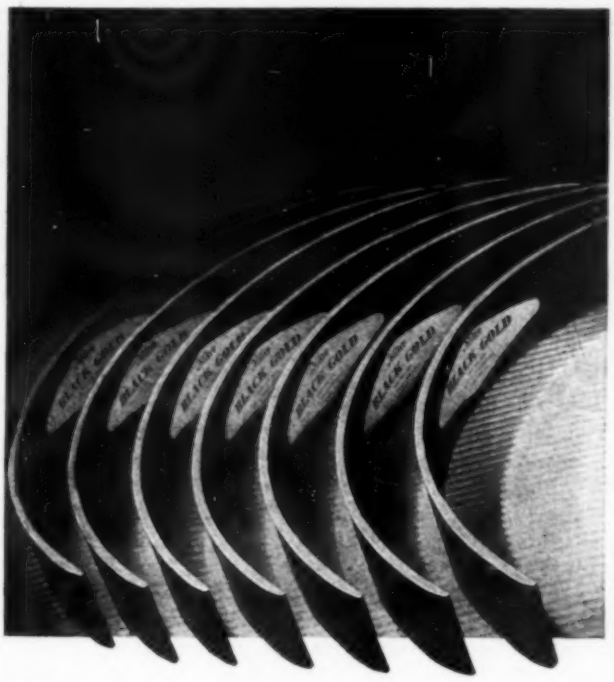
"Three further factors contribute to the benefit derived from use of lighter oils in all temperatures. Lighter oils cause less fluid friction and consequently tend to retard piston movement less than heavy oils. Secondly, since manufacture of modern automobiles has been carried to the point where engine clearances are produced with much higher accuracies than were formerly attainable, any need for heavy oils is removed. Thirdly, better control of distortions due to operating temperature stresses has resulted in much more uniform fitting of rings to cylinder walls, with the consequent elimination of areas of poor contact. Improved fittings leave no "gaps" to be sealed as best as possible by the use of heavy oils. Where ring contact is really efficient much more satisfactory lubrication is effected by the use of the lighter oils than by the heavy bodied products customarily employed.

"Advantages gained by the use of light oils in winter are not lost in warmer temperatures. Gasoline consumption, particularly at the higher speeds, is still perceptibly reduced. Considering the increased driving speeds in warmer weather, this economy becomes still more important. Since the average car consumes about thirty-five times as much gasoline as oil, the moderate rise in oil consumption is more than offset by savings in gasoline, prevention of overheating, and better performance."

For all light trucks under 2½ tons with modern, internal expanding brakes

BLACK-GOLD

Puddled like iron . . . rolled and heat treated . . . molded to a density approaching that of cast iron . . . this lining gives superlative performance.



BLACK-GOLD is the most phenomenal development in brake lining since Ebonite, the first semi-molded. BLACK-GOLD actually does what few linings EVEN CLAIM to do and does it consistently, does it for everyone. It should not be confused with ordinary molded linings of high asbestos content, nor those that rely on fillers of rubber, clay, oils or natural carbons for body. BLACK-GOLD has none of the faults common to such linings; does not glaze, harden, fry, peel or "erase." It gives the same superlative pedal action at 100, 5,000, 10,000, 20,000 miles, all the way. Being 70% minerals it dissipates heat rapidly and practically eliminates drum scoring and chatter.

For large trucks and external brakes, EBONITE

Use Ebonite to modernize old brakes—to give 2 wheel brakes 4 wheel power. See Ebonite advertisement in March issue of FLEET OWNER.

Special Test Offer

Black-Gold or Ebonite will be shipped to any rated fleet operator with the understanding that if it does not improve brake action and diminish pedal fade and give more miles per dollar it can be returned any time within six months and the full purchase price will be refunded. Send for test lining today. Give make and model. Stipulate these conditions on your order.

Milco "Miles of Service" L. J. MILEY COMPANY INCORPORATED 1468 S. Michigan Avenue, Chicago, U.S.A.

Are YOUR Trucks Under Your Thumb?

—or are you trying to manage them by guesswork?

DO you KNOW what your trucks are doing all day? Are they putting in a real day's work?

How are you going to keep track of them all day when they are "out of sight, out of mind?"

The answer is in three words—

Install SERVIS RECORDERS

This little device on each truck puts on your desk every day a chart showing you every movement of the truck the day before—*Busy* Time and *Idle* Time.

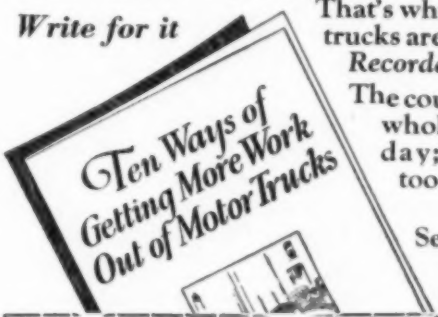
That puts control right under your thumb—no "maybe's"—no arguments. All automatic—the truck "writes" its own record.

Save $500 per Truck per Year

Motor trucks are expensive to operate. The running time of a truck costs from $3 to $5 an hour! That's why delays, *avoidable* delays, are so costly. Half an hour per day *avoidable* idle time easily costs you $500 per year. It's a big loss.

That's why over 100,000 trucks are already *Servis Recorder* equipped.

Write for it



The coupon brings the whole story. Act today; that's none too soon!

The Service Recorder Company Cleveland, O.

THE SERVICE RECORDER CO.
1422 Euclid Ave., Cleveland, O.

Please send us, without obligation, "10 *Ways of Getting More Work out of Motor Trucks.*"

Company .....

Attention of .....

Street .....

City & State .....

THE SERVIS RECORDER
"Keeps Trucks Busy"

"Time is money." Time lost through tire mishap often begins in the garage—through improper inflation or not guarding against loss of air while enroute. In addition, tire mileage is wasted and customer satisfaction is jeopardized through delayed deliveries or unkept schedules.

Save money and your reputation by seeing that your truck or bus tires are well serviced *before* they start out . . . valve cores tested and replaced, if necessary, with fresh Schraders. Then cap the valve-stems with Schrader "Dublcheks." They not only serve as an extra protection, but make inflating "as easy as pushing a button." Nothing to unscrew and replace. Their cost is trifling; their saving, immeasurable. Get in touch with your regular source of supply—today.

"Be sure it's a Schrader—look for the name." Because of their recognized greater dependability, Schrader valve parts are standard of the tire industry and the most widely used for replacements. A. Schrader's Son, Inc., Brooklyn, N. Y.; Toronto, Can.—*Makers of pneumatic valves since 1844.*

Schrader

Reg. U. S. Pat. Off.

TIRE-SAVING VALVES, CAPS AND GAUGES

The Trend Towards High Compression Ratios

SPECTACULAR innovations in the body and chassis designs of 1934 automobiles have almost overshadowed equally significant improvements to be found under the hoods of this year's cars. Of these, a continuation of the trend toward increased compression ratios is one of the most important, according to the belief of Dr. R. E. Wilson of the Standard Oil Company of Indiana.

"According to data available at this time, seventeen well-known makes of cars average a compression ratio of 6.1 to 1 in the 1934 models," Dr. Wilson stated. "This represents an increase of nearly 0.5 ratio over the average of the same cars in 1933 and 1.1 over 1931. This trend indicates a general advance in efficiency of engine design.

"This greater efficiency is made possible mainly by the sharp improvement in motor fuels made last year, both in volatility and anti-knock qualities. In fact, in recent years the quality of gasoline has outstripped the ability of many automotive engines to realize all of the advantages inherent in the fuel. Recognizing this, automotive engineers this year have taken steps toward rectifying that deficiency by increasing the compression ratios in the new cars.

"The increased octane rating in regular grades of gasoline achieved last year makes a gasoline suitable for most high compression motors available at lower average prices than ever before. The general advance in compression ratios, even among low-priced cars, makes use of a gasoline of low octane value unpleasant and inadvisable, whether the consideration be economy or performance. Ethyl, of course, continues to receive the exclusive recommendation of at least two manufacturers of high-priced cars having particularly high compression ratios.

"Other factors being equal, it is generally true that the higher the compression ratio of an engine, the higher the octane value, or anti-knock rating, of the fuel required. However, that is by no means the whole story.

"While the increasing octane number of gasoline is the principal factor which has made possible the higher compression pressures, there are numerous other factors in engine design, particularly those tending to reduce engine temperature, which permit an increase in compression ratios and engine efficiency without requiring especially high anti-knock value in the gasoline. The use of relatively compact combustion chambers, more efficient methods of cooling, particularly around spark plugs and exhaust valves, the use of aluminum pistons, the correct location and design of spark plugs, are all factors which tend to increase the permissible compression ratio of an engine operating on a given fuel; and it is therefore true that some engines of moderate compression ratios require a better anti-knock fuel than more intelligently designed engines of higher compression ratio. Also, certain engines tend to accumulate carbon more readily than other engines, and as carbon accumulates in any engine, it always requires a better anti-knock fuel for satisfactory operation.

"Automotive engineers are also beginning to recognize that they can increase both the compression ratio and the volumetric efficiency of their engines by taking advantage of the increased volatility of most gasolines; and accordingly using less heat on the manifold. Excessive manifold heating not only increases the tendency of knock but necessarily expands the charge going to the engine, thus decreasing the weight of fuel which can be taken at wide open throttle.

"A study of this year's engine designs indicates that automotive engineers are making more use than ever of all these factors, and this fact, coupled with the use of better grades of gasoline, will make possible standards of performance scarcely dreamed of in the cars of two or three years ago. This performance is the direct result of close cooperation between the automotive and oil industries."

•

Gasoline Taxes You'll Pay This Year

THE Federal gasoline tax of one-half cent per gallon expired January 1, 1934, but the Federal tax of one cent remains, and there are six different state tax rates to pay this year.

Here's a table showing gasoline rates in each state. Add one cent for the Federal tax. In Alabama, Louisiana, Missouri, Mississippi, New Mexico, and Florida look out for additional city or county taxes, or both.

Tax rates are given in cents per gallon:

2c—Connecticut, District of Columbia, Missouri, Rhode Island.

3c—California, Delaware, Illinois, Iowa, Kansas, Massachusetts, Michigan, Minnesota, New Jersey, New York, North Dakota, Pennsylvania.

4c—Indiana, Maine, Maryland, Nebraska, Nevada, New Hampshire, Ohio, Oklahoma, South Dakota, Texas, Utah, Vermont, West Virginia, Wisconsin, Wyoming.

5c—Arizona, Colorado, Idaho, Kentucky, Louisiana, Montana, Oregon, New Mexico, Virginia, Washington.

6c—Alabama, Georgia, Mississippi, North Carolina, South Carolina.

6½c—Arkansas.

7c—Florida, Tennessee.

•

G. E. Uses Floodlighted Trucks

AUTOMOTIVE trucks with floodlights over the signs on the sides of the body have been put into service by the General Electric Company, Schenectady, N. Y. Two such trucks have been acquired to replace two trucks of the G. E. fleet of five at Schenectady which are being retired. The two new ones will operate between Schenectady and Philadelphia.

These trucks are most completely illuminated. They are equipped with a 500-watt bus-type generator with voltage regulator, and with two large bus-type batteries. A 12-volt electric system is employed.

The most outstanding lighting features are the small floodlights concealed in troughs above the words "General Electric" and the G. E. monogram. In addition to these floodlights, which cause the company's name to stand out conspicuously at night, the trucks are provided with two sets of headlights, one of which is a reserve set, ditch lights under the front bumpers, port lights on each side of the body in front, green running lights along the bottom of each side to guide other vehicles in passing the trucks, two combination tail and stop lights, and two rear marker lights.

Control switches for the lights are assembled in two switch panels in the driver's cab, each panel having six switches. Each circuit is protected by an automatic circuit breaker.

The trucks are completely outfitted with safety equipment. They are supplied with sanders for their own safe operation, and they have red flares for use in warning traffic in case of a tie-up or accident. They

DESIGNED *for* FLEETS

The New Type Greatly Improved Charter Drive

New Spring—Double Coil—Double Hook—five times the strength

New One-Piece Pinion

Forged Driver

Does Not Stick

Does Not Chew Flywheel Gears

Cuts Maintenance

The improved Charter Drive has all the basic principles and advantages of the old type that reduced fleet maintenance costs traceable to starting troubles, with new features that extend the life of the Charter Drive. This means still more reduction in starting maintenance and attendant costs such as field repairs.

Available at present for ½" and ⅝" starting motor shafts with 10- 11- and 13-tooth pinions.

Burgess - Norton Mfg. Co.

Licensees

545 PEYTON STREET

Geneva, Ill., U. S. A.

One fifth of every gasoline dollar

..up in smoke

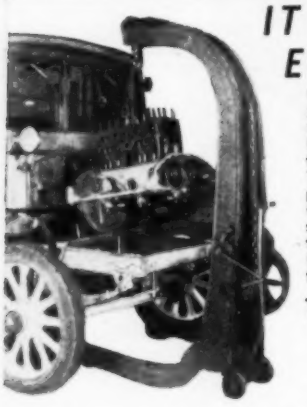
UNLESS the exhaust gas is periodically checked, tremendous gasoline waste may be suffered before the inefficient operation of a motor is noted. Here is a rugged and compact instrument which will accurately and continuously indicate completeness of combustion. Simply insert the hose fitting into the tail pipe and the instrument shows instantly the air-fuel ratio and percentage completeness of combustion. Exclusive design features make possible accurate and vibrationless readings on the roughest roads as well as in the shop. Regular use of this instrument will save its cost many times over.

11" x 8" x 8"—Wt. 29 lbs.

Cambridge Instrument Co., Inc.
3732 Grand Central Terminal
New York City

CAMBRIDGE EXHAUST GAS TESTER

Send for literature



IT IS FAR MORE ECONOMICAL....

to have in your maintenance department a well built, heavy-duty crane which can be used FOR ALL PURPOSES, than to buy a small cheap one that can be used for small work only. This has been proved in hundreds of plants equipped with Canton Portable Cranes. Being mounted on small sturdy wheels, these cranes are easily taken to the job wherever it may be. It pays for itself quickly. Write for full details.

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CANTON, OHIO
New York Office—Room 704
401 Broadway

LUBAL

COLLOIDAL GRAPHITE

Oil and Gasoline Treatments

Would you lower your mileage costs? Do you want longer efficient motor operation? Would you get more service from your crank-case oil and increased gasoline mileage? Then write for detailed LUBAL facts to-day.

LUBAL INC. Columbus, Ohio

are also equipped with air brakes, air horns, air windshield wipers, and defrosters built into the cowl to use heat from the motor to keep frost off the windshields. Each truck has two fire extinguishers, a small one in the cab and a large one on the running board; and each is also furnished with a towing hook. The cabs are hot-water heated. In each is a first-aid kit.

The operating instructions for the drivers of the trucks are to maintain quick, reliable and safe overnight delivery service and to practice every courtesy of the highway. During 1933 their mileage totaled 270,000 without an accident that could be charged to the drivers.

●

What to Expect for Your Trade-Ins

UNDER the proposed Code for the Truck Division of the Motor Vehicle Retailing Trade, the following schedule of trade-in allowances has been submitted:

From the factory list price of truck, chassis body and equipment, at the time of purchase, plus handling and transportation charges to the place where traded in, deduct depreciation from the date of purchase to the date of trade-in at the rates specified in the following table as applicable to trucks of that class.

When the price, as defined above, is not more than $700, deduct depreciation at the rate of:

5% per month for the first six months.
4% " " " " next " "
3% " " " " " "
2% " " " " " "
1% " " " " " "
Trade-in after 2½ years not over 10%.

From $701 to $1,000.

5% per month for the first six months.
4% " " " " next " "
3% " " " " " "
1% " " " " " "
1% " " " " " "
1% " " " " " "
Trade-in after 3 years not over 10%.

From $1,001 to $1,800.

5% per month for the first six months.
3% " " " " next " "
2% " " " " " "
2% " " " " " "
1% " " " " " "
1% " " " " " "
1% " " " " " "
Trade-in after 3½ years not over 10%.

From $1,801 to $2,500.

5% per month for the first six months.
3% " " " " next " "
2% " " " " " "
1% " " " " " "
1% " " " " " "
1% " " " " " "
1% " " " " " "
1% " " " " " "
Trade-in after 4 years not over 10%.

From $2,501 to $3,500.

5% per month for the first six months.
3% " " " " next " "
1% " " " " " "
1% " " " " " "

1% per month for the next six months
1% " " " " " " "
1% " " " " " " "
1% " " " " " " "
1% " " " " " " "
Trade-in after 4½ years not over 10%.

Over $3,500.

5% per month for the first six months.
2% " " " " next " "
1% " " " " " " "
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1% " " " " " " "
Trade-in after 5 years not over 10%.

●

S. A. E. Discusses Low-Grade Fuel Engines

SPARK-IGNITION engines for burning inexpensive fuels were discussed by three engineers before 250 members and guests of the Metropolitan Section of the Society of Automotive Engineers at their meeting last month.

F. H. Dutcher of Columbia University, past chairman of the Section, delivered the principal paper. F. C. Mock, research engineer, Bendix Research Corp., and Dr. M. J. Zucrow, vice-president, Paragon Vaporizer Corp. each presented short papers in which they outlined experimental work chiefly with substantially conventional gasoline engines modified to burn heavy fuels. Various methods of introducing the fuel to the combustion chamber of the engine were dealt with, these involving carbureting a part or all of the charge or injecting the fuel directly into the cylinder.

Mr. Dutchere concluded that it is not logical to expect high power output from an engine designed for operation on gasoline when a less volatile fuel is used: that, if it were possible to obtain complete homogenity of the charge, injection-type, low-compression, spark-ignition, oil-burning engines would deliver power nearly approaching that from gasoline; and that performance with fog mixture is considerably superior to that of dry vapor-air mixtures.

It developed from Dr. Zucrow's paper that operation of buses on heavy fuel can be made quite satisfactory except in respect to fumes produced under certain conditions.

Mr. Mock gave some interesting particulars about research in which spherical combustion chambers were used and showed that exhaust odors and other faults may result from the condensation of fuel on cool cylinder walls.

Discussion by W. E. John indicated that butane is being used successfully in some engines on the Pacific coast and there appear to be possibilities of further developments with this type of fuel. Others questioned the possibilities of accurate metering of fuel injected into small cylinders but this objection, it offered, can be or has been met with modern injection equipment.

Representatives of fuel refining companies indicated that the extensive use of low-grade fuel would soon result in raising its price and quickly offset any gains anticipated in reduced fuel costs, but it was pointed out that substantial economies have been realized with such fuels in some commercial applications in engines of the type considered.

Bring wasted oil dollars . . . home to roost

YOU may not know it—but half of the hard earned dollars that go to pay for motor lubrication could be kept safely at home if you had a Skinner Oil Reclaimer in your garage.

Yes Sir! A Skinner cuts oil bills right in half by restoring to crankcase drainings, the lubricating qualities they possess when new—making possible re-using the oil over and over again. The oil you drain and throw away is every bit as good as when poured into your engines—the only difference, as far as lubrication is concerned, is the accumulation of foreign contaminations which a Skinner thoroughly removes for as little as 1½c a quart.

Also, a Skinner will lower your maintenance costs by making it practical for you to use the finest lubricants obtainable and change oil oftener—at the same time half the dollars you now spend will roost on the profit side of your ledger. Fill in the coupon below for complete information.

SKINNER
OIL RECLAIMER

SKINNER MOTORS, INC., Pioneers in Oil Reclamation
2229 Dalzelle Street, Detroit, Michigan

Please tell us definitely with facts and dollar-and-cents figures, what a Skinner Reclaimer will save us in cash and oil.

We purchase approx._____gals. of oil per month
We drain approx._____gals. of oil per month
We pay_____per gal. of oil
Our electric current rate is_____per kilowatt hour
Signed_____4-34

900 ROOMS TO CHOOSE FROM . . . AT RATES *as Low as $2.00 per day*

SOME rooms command as much as $10—but all have private bath, circulating ice water, tip-eliminating servidors and box-mattressed beds. Shelby suites are out in front, too—they're second to none in Detroit—they're economically priced—$6 to $25. The Shelby is conveniently located in the heart of downtown Detroit—near the shops—theatres—principal office buildings and transportation depots.

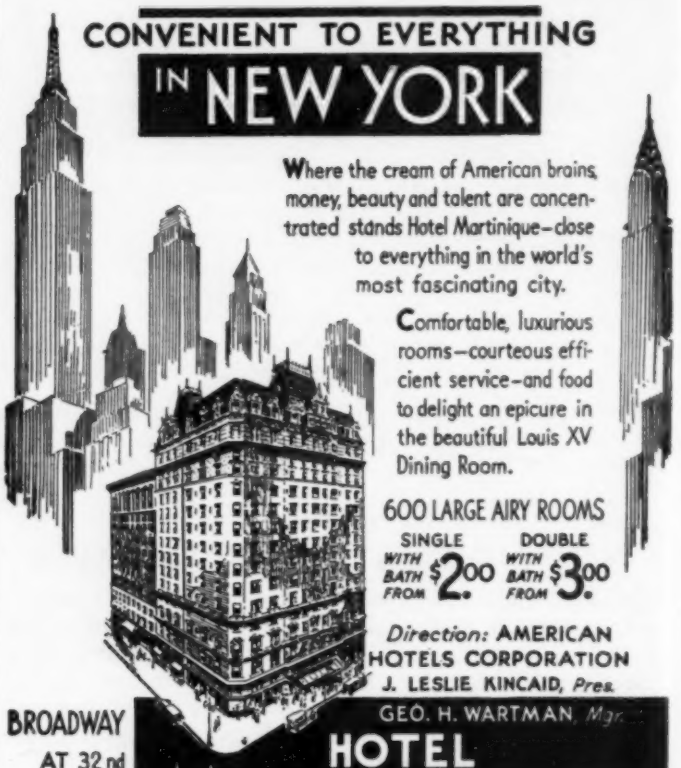
Lobby Shops. Masseur parlors for ladies and gentlemen. 3 popular priced restaurants. Garage.

HOTEL Fort Shelby

MAYNARD D. SMITH
President
DETROIT

"AGLOW WITH FRIENDLINESS"

CONVENIENT TO EVERYTHING IN NEW YORK



Where the cream of American brains, money, beauty and talent are concentrated stands Hotel Martinique—close to everything in the world's most fascinating city.

Comfortable, luxurious rooms—courteous efficient service—and food to delight an epicure in the beautiful Louis XV Dining Room.

600 LARGE AIRY ROOMS

SINGLE WITH BATH FROM $2.00 DOUBLE WITH BATH FROM $3.00

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GEO. H. WARTMAN, *Mgr.*
HOTEL MARTINIQUE

Keeping the Lead in MILWAUKEE, WIS.

RADIO IN YOUR ROOM WITHOUT CHARGE
Completing our $200,000 Modernization Program

Famous Food in the Coffee Shop
BREAKFAST....25¢
LUNCHEON.....35¢
DINNER..65¢ *Upward*

ALL ROOMS WITH BATH AND RADIO $2. UP

PLANKINTON HOTEL

CHICAGO GOVERNORS
Can Double Operating Profits !

for from $11.50 you can cut operating costs from now on.

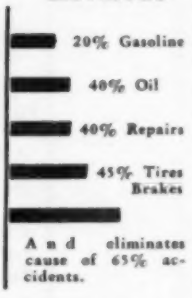
In a recent issue of Fleet Owner, Armour & Co., internationally famous meat packers, reported a saving of 25% on maintenance costs resulting from the use of Governors on their 3,000 vehicles—large trucks, light trucks and salesmen's cars.

Total your maintenance costs for the last few years. Then figure what a cut of 25% in this total would have meant to you—what a showing it would make for any fleet manager. Then check up on these savings by trying it out.

Run a 30-day Test FREE

Just write us make and model of car or truck, we'll send the governor. If on your equipment, under your everyday working conditions it doesn't save at least 1c per mile, send it back.

NOTE THESE AVERAGE SAVINGS



And eliminates cause of 65% accidents.

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Your Jobber Can Supply FENDERS

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CHEVROLET, FORD
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GET acquainted with the jobber of Fostoria Fenders in your locality. He can supply fenders for your Ford and Chevrolet fleets when you need them and as you need them. Fostoria Fenders require no introduction. They have been the standard replacement fender for nearly fifteen years. Write for catalog, price list and name of Fostoria jobber in your locality.

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GENUINE **Fostoria fenders**

THE WORLD'S STANDARD REPLACEMENT FENDER

Radiator Cleansing Processes Not Used

"WE do not make our own repairs to radiators, but farm this work out to a radiator repair shop. Therefore, we have no equipment for this particular purpose. The truck dealer is our source of supply on radiator replacements.

"Standard equipment radiators are adequate for the passenger cars and trucks in our fleet, but not on the buses. Our most common troubles with radiators are caused by the tubes opening at the seams and coming loose at the header plates. In cases of difficulty, we

(*Please turn to page* 64)

PLYWOOD HASKELITE PLYMETL

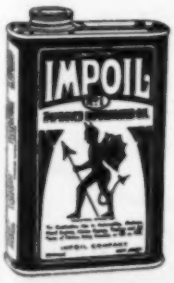
FOR BETTER BODIES! *use*

PLYMETL

"LIGHTEST and STRONGEST" PANELING

HASKELITE MANUFACTURING CORPORATION
208 W. WASHINGTON ST., CHICAGO

COLLOIDAL-GRAPHITED OILS



IMPOIL NO. 1—The improved upper-cylinder lubricant. Just add it to your gasoline in very small quantities.

IMPOIL NO. 2—For use in crankcase, transmission and rear-axle. Provides *improved* lubrication. Makes the best oil better.

These oils are especially blended for automotive uses, using the right quantities of the very finest COLLOIDAL GRAPHITE. (See article in the March issue of FLEET OWNER). Write for interesting literature and ask us to prove how this product will cut your operating costs and provide better lubrication.

IMPOIL CO., INC., DENVILLE, N. J.

SPONGEX
(Sponge Rubber)
Honeycomb Cushions

For Truck and Bus Seats
Last as long as the vehicle
Write for descriptive booklet
"A New Way to Ride on Rubber."

THE SPONGE RUBBER PRODUCTS CO.
Derby, Connecticut

"1481" UNCONDITIONALLY-GUARANTEED!
LIBERAL FLEET AND DEALER DISCOUNT

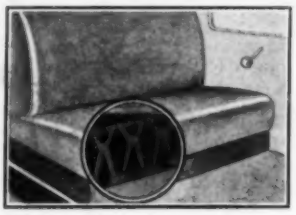
U.S AXLES

A complete line of superior quality axle shafts for all makes and models of passenger cars, trucks and buses. A special engineering service to study your individual problems is available to all responsible fleet operators.

Write for complete information

The U.S. Axle Co. Inc., Pottstown, Pa. U.S.A.

Comfort and Long Service



BLACK DIAMOND
All Rubber Back and Seat
CUSHIONS
- Exclusive Design
- Any Size or Shape

Moulded in one-piece of semi-sponge rubber, assuring easier riding and no upkeep expense.

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INDIANAPOLIS

Value When You Go To PHILADELPHIA

600 ROOMS 600 BATHS
A ROOM and A BATH For TWO and A HALF

$2.50 SINGLE WITH BATH $4.00 DOUBLE WITH BATH

HOTEL PENNSYLVANIA
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ARMORPLY
A SUPERIOR METAL FACED PLYWOOD PANEL FOR BODY CONSTRUCTION
Write for samples and prices
UNITED STATES PLYWOOD CO. INC.
603 W. 36th. ST. NEW YORK CITY

FROM COAST TO COAST—

over 200 leading jobbers carry a complete stock of Genuine Gunite Brake Drums. There is no need to accept a substitute for Gunite—the Extra Mileage Drums—you can easily get them everywhere.

FREE *Send a postal for the big 1934 Gunite Catalog—a complete reference book on replacement drums.*

GUNITE FOUNDRIES CORP.
DEPT. F-4, ROCKFORD, ILLINOIS

Colloidal Graphited Lubricant

Glāzoil

SCIENTIFICALLY CORRECT

REDUCES YOUR OPERATING COSTS when added to your oil and gas REGULARLY. If your jobber or dealer cannot supply you, write us direct.

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Remember this

Try out every single make of truck on the market and you will not find ONE that can equal the performance of a Marmon-Herrington All-Wheel-Drive. Write today and find out why.

MARMON-HERRINGTON
INDIANAPOLIS, INDIANA
21 Models 1 1/2 Tons Up New Low Prices

depend on the radiator manufacturer to make proper adjustment.

"We use manual shutters as a protection against cold. We have had plenty of trouble with our thermostats on the buses and have removed all of them. We find that a warm engine is necessary to insure efficient carburetion.

"We use anti-freeze in our trucks, buses and passenger cars. Alcohol is used in the buses and Firestone anti-freeze in the others. We do not use radiator cleansing processes as this has not been found necessary in our fleet. We are bracing our radiator assemblies with cross-rods instead of single rods."—*Edw. J. Simpson, Supt. of Equipment, Interstate Power Company, Dubuque, Iowa, operating a fleet of* 15 *trucks,* 25 *buses,* 4 *passenger cars and* 1 *other.*

●

48 Spark Plugs in Streamlined Train

SPARK plugs have been found in many queer places. but about the last place one would expect to encounter them is in the semi-diesel motor of the new streamlined Union Pacific high-speed train which is making a tour of the country.

Yet, according to Otto C. Rohde, chief engineer of the Champion Spark Plug Company, there are 48 Champion spark plugs in the distillate-burning 600 horsepower motor which helps the new train develop the 110 miles an hour it is designed to make.

Spark plugs are not commonly associated with Diesel engines, but the temporary motor in this train is a semi-diesel, burning a kerosene mixture, and its charges are fired by plugs just as in the ordinary automobile. This motor is hooked up directly with a generator which provides sufficient power to propel the train at its maximum speed.

Tremendous interest is being shown in the streamlined, high-speed train on its tour. People recognize in it the forerunner of a day of changed railroad transportation when the heavy, slow, steam trains will give way entirely to this faster, cleaner, cheaper form of travel.

●

New "Official Motor Freight Guide" Issued

A COMPLETE and comprehensive directory of motor freight lines, terminals and merchandise warehouses essential to traffic managers, truck operators, manufacturers and all concerns shipping by truck or dealing with the motor freight industry, has just been issued.

It gives detailed information on thousands of reliable, responsible motor freight carriers giving direct daily service to over 20,000 towns throughout the United States and Canada. It covers all types of insurance, location and telephone numbers to home office and all branches, number and type of trucks operated, year established, points served and other details on each company.

It also includes 26 pages of road and mileage maps, state legal regulations on trucks for each state and the new Spring issue includes the complete new federal code for the trucking industry.

Completely revised and issued quarterly, it includes all changes, additions and corrections on all carriers, and also includes the latest developments in the motor freight industry. For details, address "Official Motor Freight Guide," 732 W. Van Buren St., Chicago, Ill.

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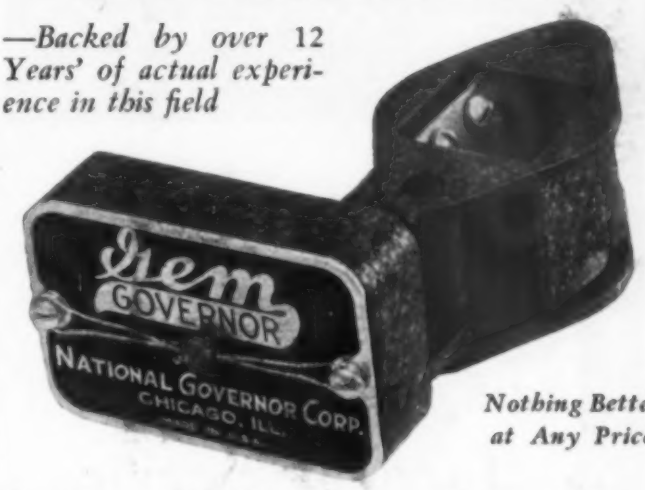

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1½ in. Standard S.A.E. Flange . . 5.50

Above prices include all necessary fittings for installations.

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National Governors are built to take care of the special features incorporated in carburetors on late model Chevrolet, Dodge, and Plymouth.

"SENIOR" National Governors:
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National Governors are adjusted for various speeds by increasing or decreasing the valve openings, instead of stretching the spring, and do not depend on only one fixed spring location for high or low speed settings. The re-locating spring feature is very flexible and a wide range of speed settings can be obtained with no surging, creeping, sticking shaft or interference to its sensitive action. These are patented National features.

GUARANTEE

National Governors are guaranteed for a period of two years against defects of material or workmanship.

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605 S. Western Ave. Chicago, Ill.

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THERE is no question in the maintenance superintendent's mind but that he should use replacement parts which equal the finest original equipment standards in every respect.

It is quite possible, however, that some confusion may exist as to how he can be sure of *getting* such parts. There need not be. When he asks for a Double Diamond product, or for a product made by Automotive Gear Works, he can obtain *only* a gear set, an axle shaft, or a flywheel starter gear which is *built to finest original equipment standards.*

Double Diamond Builds Only to Finest Original Equipment Standards. *(Detailed on the Left)*

Double Diamond Products Are Sold Through Jobbers, Under Double Diamond Name Only.

Double Diamond Makes No Sub-standard Lines of any kind, for any purpose, under any name.

To be sure of getting the quality parts he wants—to assure quick, long-lived installations—the maintenance superintendent will do well to inquire whether these facts are true of every manufacturer whose parts he may buy. There is no chance of confusion if you specify Double Diamond.

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DOUBLE DIAMOND AXLE SHAFTS are made from rolled and hammered forgings of Chrome Nickel Steel to the most exacting specifications. Twenty-three distinct machining and heat-treat operations are necessary to produce a Double Diamond Axle Shaft. Each shaft is rust-proofed and packed in a substantial container to prevent rust and oxidation, and damage through direct contact with other shafts.

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DOUBLE DIAMOND HARDENED STEEL FLYWHEEL GEARS are made of 1050 S.A.E. Carbon Steel, hardened to 50 scleroscope. Teeth are given the flat 45° angle chamfer recommended by the makers of the Eclipse Bendix Drive to permit ease of pinion entry.

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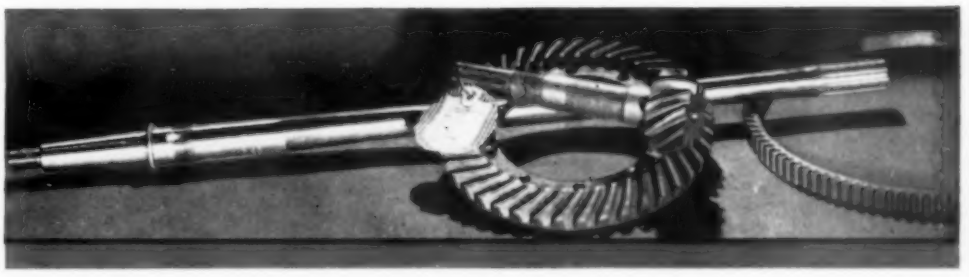

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